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DRAINABILITY OF EMSCHER TANK SLUDGE*

Essential Properties of Sludge Disposed of on Land Are Odor, Volume and Drainability—Method of Determining the Last Described—Results of Such Determination at Pennypack Creek Sewage Disposal Works.

By W. L. STEVENSON.†

Prior to the use of the Emscher tank, it was expected that sludge from sedimentation or septic tanks would dry slowly, and it was therefore necessary in the design of works to provide ample space to receive and retain the liquid sludge until it had dried to a consistency fit to be removed to a dump.

The thorough digestion of organic matter in the sludge compartment of a mature Emscher tank results in a destruction of the sticky, colloidal matters, a breaking down of organized bodies into finely divided particles, and a material reduction both in the volume of the sludge and in its percentage moisture. It also causes the presence of gas which is compressed when the sludge is in the bottom of the tank, but which expands when reduced to normal pressure as the sludge is withdrawn.

This expansion causes the solid portion of the sludge to float upon the water, which solid portion, due to the above described conditions, very rapidly separates at the bottom. For these reasons, such sludge, applied to underdrained sand beds, will dry sufficiently to be removed in a few days instead of probably weeks or months with other kinds of sludge. The rapid drying permits the use of the same bed many times a year and it is common practice to provide only one square foot of drying bed for each three persons tributary to Emscher tanks. Hence the drainability of such sludge has become an important matter.

The methods of sludge analysis in most common use consist in determining the percentage moisture and specific gravity of the wet mass and the percentage of the dry residue that is fixed and that which is fat or soluble in ether. These tests are principally of value to show, in an indirect way, the good or bad qualities of the sludge, and it seems that an additional test is required to measure drainability.

The real and essential properties of sludge, when it must be disposed of on land adjacent to habitations, are

odor, volume and drainability. The writer is not acquainted with any better apparatus than the nose for determining the first, a foot rule for the second, and for the third the results of a few experiments are here offered in the hope that from them a simple test may be devised.

For some time it has been the writer's practice, in order to determine the propriety of removing sludge from Emscher tanks, to withdraw a small portion, place some on a white enameled plate, as suggested by Dr. Imhoff, and another portion in a glass measuring cylinder to see if the water would separate out at the bottom.

Since April of this year a composite sample of each batch of sludge placed on the drying beds at the Pennypack Creek sewage disposal works has been submitted to the two following procedures:

A portion amounting to 700 cc is placed in a 1,000 cc measuring cylinder and the amount of clear water separated at the bottom is observed and recorded at hourly intervals. This is continued until the sludge begins to settle down into the water again.

Another 700 cc portion is placed in a vertical piece of glass tubing of the same internal diameter as the measuring cylinder. Over the lower end of the tube is secured a piece of wire screen which supports a ½-inch layer of small pebbles, a ½-inch layer of clean Jersey gravel, and a 2-inch layer of fine sand. (The thickness of these layers could probably be reduced and thereby decrease the amount of entrained drain water.)

The tube is held in a retort stand over a funnel resting in a measuring cylinder to collect the water draining out of the sludge and the accumulated amount of water is read at hourly intervals until the sludge ceases to drain. The apparatus is shown in Fig. 1.

The results of the experiments are shown in Fig. 2, also the usual analyses; the number of days required for the sludge, exposed to the weather on the drying beds, to reach a consistency fit to remove; and the rainfall and air temperature during those times.

It may also be stated that sludge from Emscher tanks No. 1 and No. 2 was unsatisfactory during the early

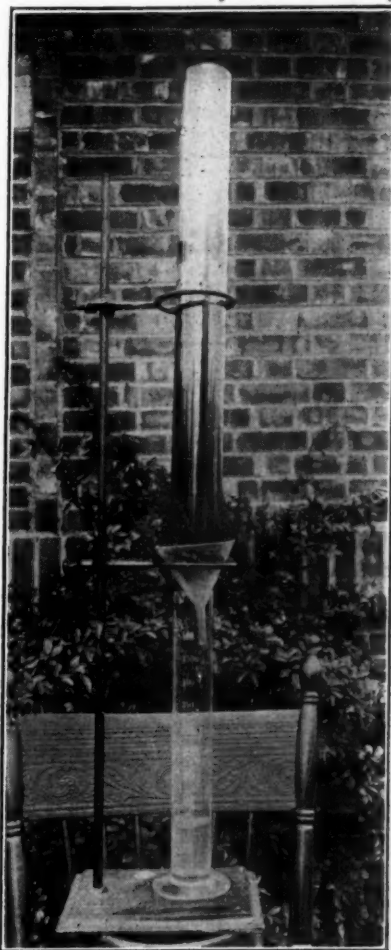
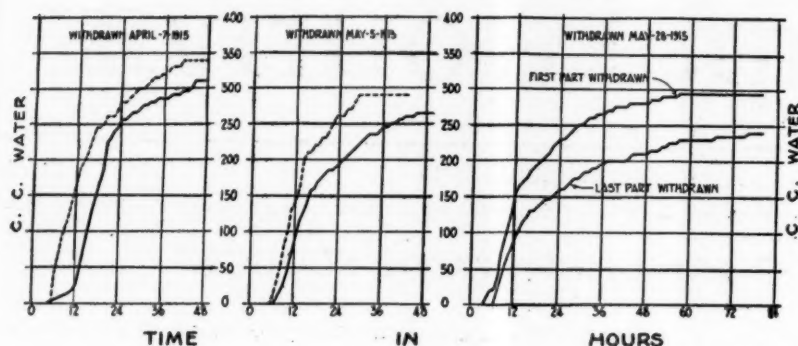


FIG. 1. APPARATUS FOR DRAINING SLUDGE.

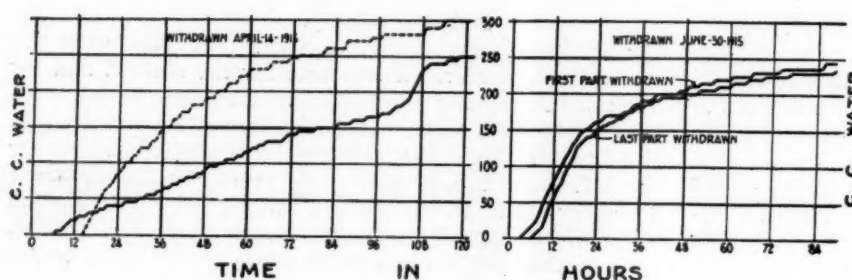
*Paper before the Sanitary Engineering Section American Public Health Association.

†Assistant Engineer, Sewage Disposal, Philadelphia, Pa.

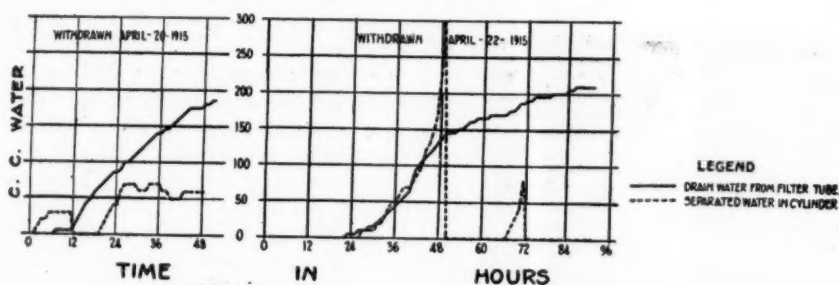
EMSCHER TANK NO. 2.



EMSCHER TANK NO. 1.



FINAL SETTLING BASIN



AIR TEMPERATURE AND RAINFALL

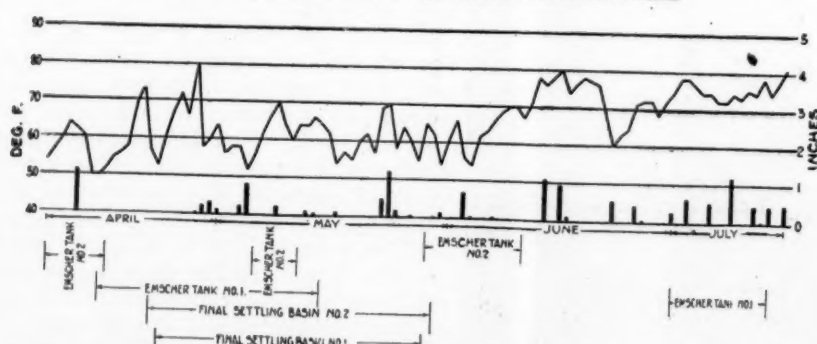


FIG. 2. RESULTS OF EXPERIMENTS ON DRAINABILITY OF SLUDGE.

Source.	Date.	SLUDGE DATA.				Dry Residue.		Could be removed from sandbed, days.
		WET SLUDGE	Parts per Million.	Per cent.	Per cent.	Per cent.	Per cent.	
No. 2 E	4-7-15	88.5	1.057	166	63	63	12.1	12
No. 2 E	5-5-15	85.8	1.026	227	429	65	10.9	10
No. 2 E	5-28-15	84.6	1.055	19	782	67.5	6.4	13
No. 1 E	4-14-15	87.5	1.026	222	129	54	18.7	13
No. 1 E	6-30-15	81.7	1.085	91	741	64	10.3	13
No. 2 S	6-30-15	81.6	1.082	33	569	64	10.4	13
No. 2 S	4-20-15	86	1.073	227	499	73	12.2	13
No. 1 S	4-22-15	No Sample						36

E—Emscher tank. S—Final settling tank. *First part.
†Last part.

operation of the plant and was found to be highly acid. This condition was corrected by the addition of lime water by means of a pipe extending through the ventilator to about mid-depth of the sludge.

The settling basin is constructed in two parts. Instead of cleaning the side in service when it shows bubbling, the practice is to place the other side in service and allow the sludge to digest with a small flow of filter effluent passing over it. This has resulted in a practically inodorous sludge; but the water does not drain readily as from Emscher tank sludge.

In several instances the sludge placed in the measuring cylinder has at first floated on the water, after a few hours has settled down, then separated and floated again.

Such action prevents obtaining a useful curve of drainability and it appears that the tube with filtering media is the better method.

An examination of the curves indicates that the factors which should be combined to obtain a number to represent the drainability of the sludge are:

- The rate of drainage represented by the slope of the first part of the curve.
- The ratio between the amount of water drained from a liter of sludge and the amount of moisture therein as determined by the usual evaporation method.
- The time required for the water to begin to drain out.

Good sludge will be indicated by (a) having a steep slope, (b) showing a large number for the ratio, and (c) showing a short time; bad sludge the reverse.

No attempts have been made to combine these three factors to form a number similar to the relative stability figure for filter effluents, because the data are too meager and only sludge from one works treating a sewage which is two-thirds institutional has been used in the experiments.

But the writer believes that more extended study in some of the sewage works or testing station laboratories might develop a simple field test capable of being made by the type of operator usually found in the smaller works and that its use would serve to indicate a very important characteristic of Emscher tank sludge.

FIRE LOSSES IN BERLIN

Fire losses in Berlin are strikingly low. This is due, among other things, to the small quantity of wood used for structural purposes, the limitations of the height of buildings to 72 feet, and, no doubt principally, to the temperament of the people. All real (immovable) property in Berlin is required by law to be insured in the so-called Municipal Fire Society. The fire losses for a recent fiscal year amounted to \$260,529 on policies aggregating \$1,314,367,233, or \$0.20 of indemnity paid for each \$1,000 of insurance.

CONCRETE ROAD AT WINNETKA

One-Course, Reinforced, with Integral Gutters—New Type of Expansion Joint—Long-Handled Floats—Other Construction Appliances

By STANLEY E. BATES.

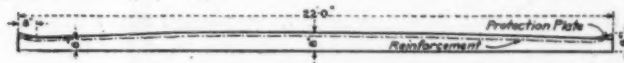
Though not large in extent, the improvement of a portion of Winnetka avenue with a 22-foot concrete pavement, recently completed, has several novel and interesting features. This street forms the southern boundary line of the village of Winnetka, Cook county, Ill., about fifteen miles north of Chicago, and in reality is more of a country road than a city street, as the locality is not built up and there are no sidewalks or other street improvements. However, traffic and particularly motor traffic is heavy.

The Indian Hill Club, one of the most exclusive golf clubs of the country, is located just west of Winnetka's city limits and Winnetka avenue forms practically the only approach to it from eastern and southern points, which include Chicago and Evanston. In addition to this, the road carries a great deal of through travel from Chicago to the north.

Early last spring the Chicago & Northwestern Railroad established a new suburban station where the road crosses its tracks, naming it Indian Hill, and a new pavement was laid beginning at this point and running a little over 1,000 feet west to the intersection of Church street, near which point the Indian Hill Club's entrance is located.

In designing the road, all of the above facts were taken into careful consideration by the engineer in endeavoring to design a cross-section adapted to the peculiar requirements of traffic. The total width was made 22 feet and the minimum thickness 6 inches. Curbs were considered unnecessary, but shallow gutters were provided, built "integral" with the pavement. They were formed by making the thickness of concrete 8 ins. at the

edges of the roadway and 6 ins. at points eight inches in towards the center. This construction gives a broad gutter 2 ins. deep, with a kind of circular bottom. Though quite a recent innovation in concrete pavement construction, the economy of integral gutters is so self-evident as to need no comment. During the past two years they have become very widely adopted in the vicinity of Chicago, though in most work a curb also is built integral with the pavement.



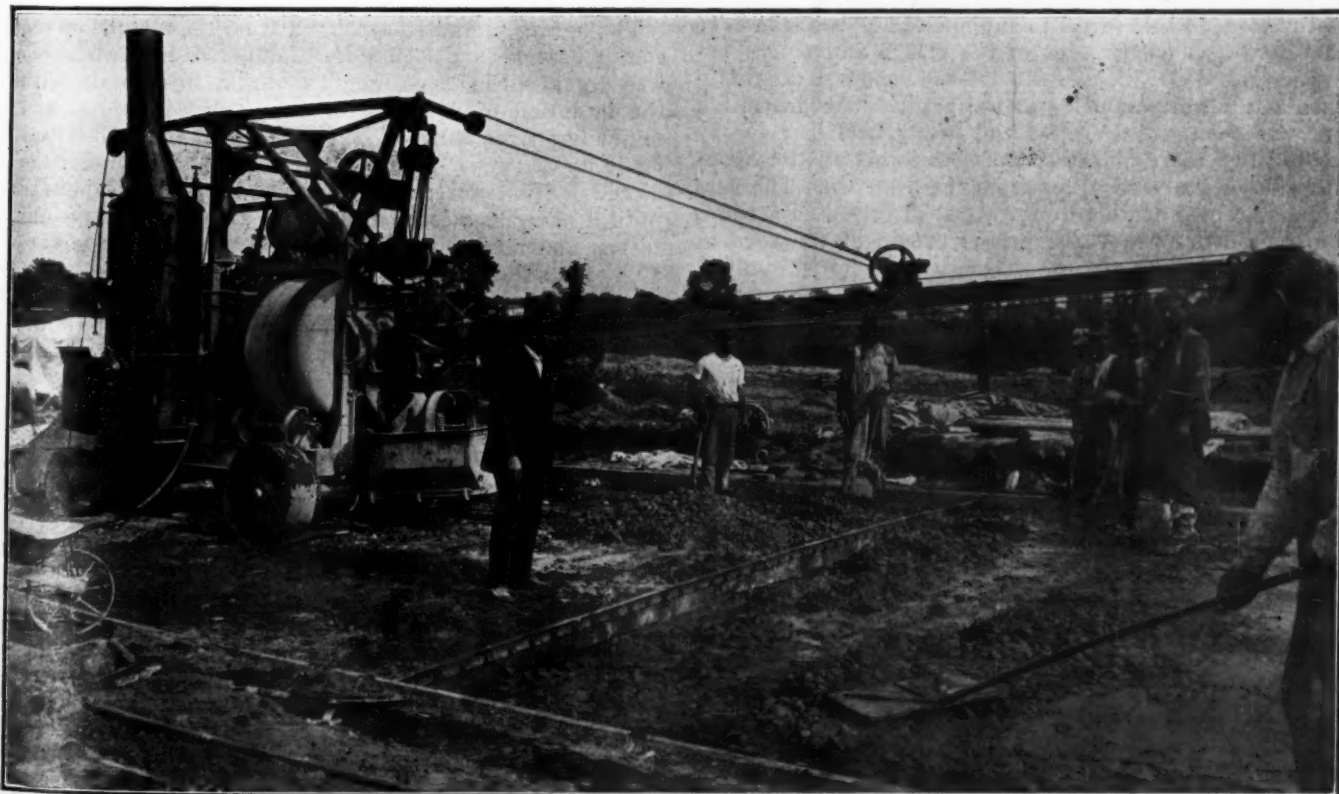
SECTION OF WINNETKA CONCRETE ROAD.

Specifications called for a one-course pavement with concrete of a 1:2:3 mix, laid on a flat subgrade. Being over 20 feet wide, the pavement was reinforced, and American Steel & Wire Co. No. 29 triangle mesh was used, placed 2 ins. from the top.

The contract was let early in April, 1915, and work started as soon as weather conditions permitted. There was a little grading to be done, but in no place did this amount to more than 18 ins. Being all in cut, there was no delay awaiting the settlement of any fill and concreting commenced immediately after the earth was removed and the subgrade rolled with a 10-ton road roller.

The work was so laid out that concreting began at the western end and proceeded east towards the railroad, allowing the materials to be hauled in wagons over the subgrade from the railroad siding to the point where work was going on. The aggregates were sand and crushed limestone, the latter ranging in size from 1¼ inches down and shipped in from quarries at Racine, Wis.

Both sand and stone were delivered on the subgrade and wheeled in barrows to the mixer. The latter was a No. 16 Koehring paving mixer with a capacity of 18 cu. ft. of unmixed material per batch or, with a 1:2:3 mix, 2½ bags of cement, 5 cu. ft. of sand and 7½ cu. ft. of stone. The distributing device consisted of a 20-ft. boom

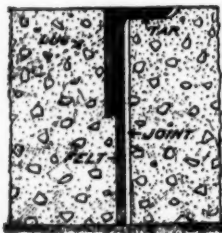


GENERAL VIEW, SHOWING CONCRETE MIXER, JOINT BAR IN PLACE, AND LONG-HANDLED FLOAT.

and an automatic bottom dump bucket with a capacity of 12 cu. ft. of concrete. With this outfit an average of about 700 sq. yds. or a little less than 300 lineal feet of pavement were laid per day. For a 22-ft. reinforced pavement of such a design and of small extent, this was very good speed.

The water supply for the road was piped through a 1½-inch line from a nearby hydrant of the village of Winnetka.

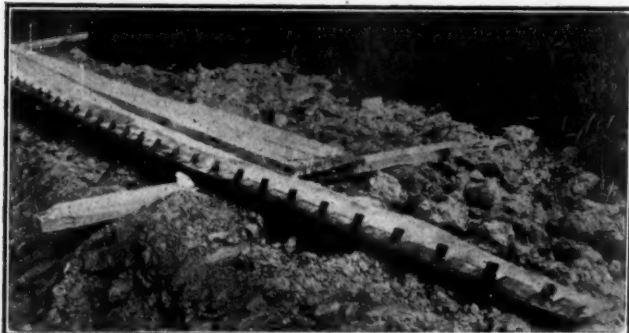
Perhaps the newest feature of the work was the use at the expansion joints, which were placed every 25 feet, of a joint protection plate put out this year for the first time by the Universal Concrete Bar Co. of Chicago. This is made of a 1½x2½x3-16 steel angle. Only one bar is put in at each joint instead of two, which is the practice when flat plates are used. The accompanying diagram shows a cross section of a joint with the bar in place, and the photographs give a good idea of the design and method of installation. The vertical leg of the bar is



bonded to one pavement slab and the horizontal leg projects out over the other, but is not attached to it. The bond between the concrete and steel is obtained by lugs sheared out of the vertical leg of the angle and bent back at an angle of about 58 deg., spaced about six inches apart. The bar weighs about 2½ lbs. per foot of length and is made of soft steel so that it will wear down under traffic at the same rate as the pavement.

In setting a bar, the inside face of the angle was first painted with hot tar, after which a strip of prepared felt ¼ inch thick and of a width equal to the thickness of the concrete pavement was pressed against the vertical leg. As the tar cooled the felt adhered firmly to the angle, which was then ready to be put in place at the joint. Three stakes were driven into the subgrade in a straight line across the road at the point where the joint was to be located to support the bar, and two blocks were nailed to the wooden side forms to support the ends of the bar; the elevations of the tops of the stakes and blocks being set to the elevation of the finished road less the thickness of the horizontal leg of the angle. The protection bar was then laid on them and firmly held in place by nailing two more blocks to the side forms on the opposite side of the vertical leg from the first two. The bars are sufficiently flexible in a vertical direction to assume, by their own weight, the proper crown of the road as determined by the stakes, although rigid horizontally.

In the finished pavement, when the concrete contracts, the end of one slab slides out a short distance but remains underneath the horizontal leg of the angle attached to the adjacent slab, and the only opening formed into which dirt can penetrate is a groove 3-16 in. deep along the edge of the horizontal angle.



JOINT PROTECTION. BAR READY TO BE SET.

After the protection bar was set in place as described, the concrete was deposited on both sides in the usual manner. Joints were spaced 25 feet apart.

The pavement was struck off by a heavy wooden template curved to the required crown and shod on the bottom with a steel plate. For finishing the surface, long-handled floats were used, followed by hand floats which were manipulated by workmen from a bridge spanning the road. The long-handled floats, one of which is to be seen in illustration No. 2, were made on the job and consist of a piece of hard wood about 1½x2½ ft. in size and one inch thick. This gives them considerable weight, which is of advantage in evening up the surface. The handles were about 10 feet long and made of 1½-inch iron pipe.

After concreting was completed, the road was closed to traffic for a period of three weeks, during which time it was kept covered with earth which was sprinkled sufficiently to keep it damp at all times.

The contractor for the road was John A. McGarry & Co. of Chicago. The engineers were Windes and Marsh, of Winnetka, Ill.

CONVICT WORK IN ARIZONA*

Men Put on Honor—Manner of Feeding, Clothing and Generally Treating Prisoners—Cost of Convict Work

By F. G. TWITCHELL,†

As the predominating interest, from the average standpoint, in the use of convict labor on public works, lies in the efficiency of the labor, rather than in what is generally termed the "uplift" of the prisoner, these remarks will deal principally with the cost of doing work with convicts under the "honor" system, this being the term that custom has applied to the plan whereby prisoners are placed in camps without guards, reliance being put upon their word that they will not run away, and that they will conduct themselves properly.

The figures presented are taken from the records of the camps known as Prison Road Camp No. 1. This camp was organized in December, 1913, on a small basis, with the intention of using it for general repair work, and minor improvements. When first put in the field it was made up of twenty-nine men and eight teams, under the direction of one foreman. Since that time it has expanded until it now has a force of fifty-five men and twenty-four teams, under the direction of three foremen, and is capable of handling and has handled, any class of road work.

Acting upon the principle that if a prisoner is worthy of being trusted he is worthy of being trusted to the fullest extent, the ordinary prison rules have not been enforced in this camp. The endeavor has been to avoid as far as possible anything that would keep the man constantly conscious that he was a prisoner. Responsibility for his actions has been placed upon himself.

Carrying out this idea, the men are dressed in civilian clothes, and with two exceptions are not restricted any more than in a free labor camp. The first of these two exceptions is that there is a set hour for going to bed and the second is that the men are not allowed to leave camp without permission, and then only to the extent of a one mile free range. Under no circumstances are they allowed to go to town. One guard, who acts as night watchman for the camp, is employed, whose principal duty, outside of this, is to look after the clothing and equipment of the men.

*Paper read at conference of Arizona highway engineers.

†Division Engineer of State Board of Control, in charge of convict road work in Arizona.

The food furnished is on a par with that furnished in the best free labor camps, and better than that furnished in many. We have been criticized a great deal on this point, though I believe this criticism has been without proper reflection. The average idea is that any kind of food is good enough for a prisoner, but the idea is based upon altogether wrong premises. It is not a prisoner that is being fed, but a workman, and this is a fact that must never be lost sight of. It is probably not necessary for me to remind you that a man poorly fed is a man who is discontented both in mind and body, whose work will reflect his state of being.

For sleeping quarters, tents are furnished, which are heated in the winter time. Each man is furnished with a cot, mattress, sheets and blankets. We have been accused of pampering the men by supplying sheets, but you can readily see that this is a necessary procedure in the interests of cleanliness. For this same reason one man is detailed as a laundryman, who takes care of all the clothing. An effort to have each man wash his own clothes did not prove successful.

Taking up the matter of cost, which is of course of the first importance, there is one point to which I wish to call your particular attention. The aggregate cost of road work is made up of many items, the most important of which are cost of labor, cost of teams, cost of material and cost of superintendence. The cost of teams, material and superintendence is as great in a prison labor camp as it is in a free labor camp, leaving the cost of labor as the only item on which we can effect a saving. At first glance this might be supposed to be very large, but when compared with the total cost of a piece of work it does not show up to as great an extent as anticipated. To demonstrate, I will say that this camp under discussion during the period from December 15, 1913, to January 25, 1915, spent nearly \$30,000 on the Globe-Roosevelt highway, and of this amount \$10,477, or about one-third, was the cost of maintaining the prisoners. Of the balance, the maintenance of the teams took nearly \$6,000, paid labor took \$3,000, the material bill for culverts, cement, powder and similar items was over \$6,000, and maintenance and depreciation on the equipment was about \$3,000. You can see from this that it would not be fair to expect convict labor to show any startling saving over free labor in the total cost of the work.

It has been with regret that I have heard some advocates of convict labor say that they believed in it for the reason that the state had to maintain the prisoners anyway, and some benefit should be derived from the expenditure of money that had to be made, whether the men were out on the road or inside the prison walls. I say with regret, because I have had to undeceive them, and let them know that the cost of keeping a prisoner in prison has no relation to the cost of keeping a prisoner in a road camp, the expense being nearly four times as great in the latter case. Laying aside the fact that a prison is a large plant in a fixed location, with easy access to supplies, and that large operations allow low unit costs; and on the other hand the road camp is a small plant, constantly on the move, with heavy transportation expenses both for men and material, the outstanding reason that it costs a great deal more to keep a man on the road is that this man on the road is doing rough, hard, manual labor. He needs a lot to eat, and he wears out a lot of clothing.

On the Globe-Roosevelt highway last year it cost us 78.7 cents per day to keep a man, this covering food, clothing, medicine, tobacco and the night watchman. This cost per day was for every prisoner in camp, including the camp force of cooks, flunkies, etc., who are generally known as "non-producers," and for every day in the year, including Sundays and bad weather days when

no work was going on. The cost per man working day, by which I mean the cost of putting the prisoner on the job, for every day he actually worked, was \$1.29. I wish to remind you that this working day cost had to include the cost of the camp force on working days, and the cost of maintaining the whole force on Sundays, on days when the weather would not permit of work, and on days when the camp was moving. I might mention here that during the period of thirteen months referred to the total number of days lost from these causes was ninety-seven, or twenty-five per cent of the total time the camp was in operation on this job. It also had to include the cost of transporting the men from the prison to the camp, which amounted to a total of \$1,252, or 15.4 cents per man working day.

With this information, and taking into consideration the facts that the work was largely repair work and reconstruction, that it was scattered over some thirty miles of road, that the average water haul was three miles, and the average supply haul was twenty-one miles, we will take up the most important matter of all, that of unit costs.

Clearing and Grubbing—largely mesquite and chaparral: The average cost for some fifty-seven acres was \$9.18 per acre.

Solid Rock Excavation—Total quantity moved, 4,392 cubic yards. Where this work was so located that full benefit could be derived from the necessary drilling and shooting, the cost ran from 65 cents to 85 cents per yard. When it consisted largely of shooting off projecting points and widening the road at narrow places, the cost was from \$1.25 to \$2.50 per yard. The average cost for the total quantity moved was \$1.274 per yard.

Loose Rock and Boulders—total quantity, 9,300 cubic yards: Ranged in cost from 26 cents to 81 cents per yard; this latter being material that had to be shot, although it could not properly be classified as solid rock; average cost, 66.3 cents per yard.

Earth Borrow and Excavation—total quantity 20,428 cubic yards: Ranged in cost from 14 cents to 45 cents per yard—most of this work was on steep hillsides; average cost, 25.2 cents per yard.

Foundation Excavation—total quantity, 688 cubic yards: Average cost 56.1 cents per yard.

Dry Walls—total quantity, 126 cubic yards: Cost, \$1.18½ per yard.

Rubble Masonry—total quantity, 612 cubic yards: Average cost, \$3.82 per yard.

Concrete—total quantity, 116 cubic yards: Average cost, \$13.16 per yard. This high cost is principally due to the small quantity placed, which did not permit the men to obtain experience and skill in form building and concrete mixing.

Ditching—total quantity, 5,209 cubic yards: Average cost, 25.3 cents per yard.

I wish to also submit the costs of the work done so far by this same camp on the Tucson-Florence highway in Pima county. This work is new construction, and in consequence of not being scattered, is being done cheaper. The average water haul has been three miles, and the supply haul nine miles, and we have been able to reduce the cost of a prisoner working day to \$1.144.

The unit costs on this work have been as follows:

Clearing and grubbing, \$15.82 per acre.

Earth excavation and borrow, .182 per cubic yard.

Solid rock excavation, .844 per cubic yard.

Ditching, .175 per cubic yard.

Concrete, \$9.88 per cubic yard.

When comparing these unit costs with contract prices for similar work, it should be remembered that a contractor has three sources of profit that are denied us. These

are the boarding house, commissary, and medical service.

In concluding, I wish to make a few remarks about the effect of road work on the prisoners, not to make any plea of sympathy for them, for their punishment is not unjust, but to present a strictly utilitarian fact. The prisoner who has been doing hard manual labor (and it is hard manual labor) for a period of months, living an outdoor life, with good food and enforced good habits, when released, is a strong healthy man, and is much more likely to try to keep straight and earn a living than a man who has been made soft and weak, and had the heart taken out of him, by long confinement behind the prison walls.

AUTOS IN YELLOWSTONE PARK.

Those who travel to the Road Congress and the Panama-Pacific Exposition by auto will now be able to ride through the Yellowstone National Park in their own cars instead of in the tourist stages. This has been possible only since July 31st, when the government opened the park to private automobiles, although under strict rules. Previous to that date no automobiles of any kind had been allowed in the park, chiefly because of the danger of frightening horses which were entirely unaccustomed to motor vehicles. At many points there would be serious danger to those in vehicles if the horses drawing them should be frightened. The formal opening took place at 6 P. M. July 31st, when a procession of automobiles passed through the Gardiner entrance, headed by several park officials in a White car. Another popular entrance is 70 miles from Cody, Wyoming, the road connecting the two having just been improved at an expense of nearly \$100,000.

Colonel Brett, superintendent of Yellowstone Park, has devised a set of regulations which will be rigidly enforced. At present the privileges of the park are only



THE FIRST AUTOMOBILE IN THE YELLOWSTONE.

extended to privately owned motor cars. The present tourist service through the park will be maintained by horse-drawn vehicles operated by the regular transportation companies as heretofore. All regular traffic will move in one general direction in going through the park. Motor cars will leave one-half hour before the stages, from the entrances or from the controls where they are checked in during the journey through the park. The speed at which cars may travel is stated in the regulations and varies according to the requirements of safety in various localities. Fines will be imposed on motorists who arrive or leave the controls not according to schedule.

A special telephone service has been installed to enable motor tourists to keep in touch with headquarters if breakdowns occur. In such emergencies, if motor cars are unable to reach the next control on time, they must be parked off the road or on the outer edge of it, and wait for the next schedule of motor cars passing that point or until special permission to proceed is obtained from the park guards.

FIRE ALARM POLES AND PEDESTALS.

The superintendent of fire and police telegraph of St. Louis, George McD. Johns, in his report for the year ending April 12, 1915, states that a new design has been adopted for cast iron pedestals for police alarm and fire alarm boxes, and that metal patterns have been purchased for these and for telephone-box doors and police flash-light semaphores and covers for same. By furnishing these to foundries contracting for these castings, uniformity and perfect agreement with the designs are insured. It would seem probable that somewhat lower prices might be obtained also.

A large number of the wooden poles used by the department have been in the ground for years and have begun to rot at the ground line but are otherwise sound. To preserve these a method of reinforcing the weak point has been adopted. After removing the earth around the base, the pole is surrounded with expanded metal and reinforcing rods and a concrete of cement, gravel and sand is poured into the opening so that these are imbedded in it. Fifty-three poles were so treated last year and the method appears to be very satisfactory.

ROCK ASPHALT IN THE PHILIPPINES.*

Deposits of asphalt in Leyte, one of the Philippine islands, which have been reported from time to time during the past year, have recently been examined by the division of mines of the Philippine Bureau of Science, and the following statement sets forth the principal results of the examination:

The outstanding feature of the recent official examination is the discovery of a large deposit of bituminous limestone near the town of Villaba and at a point very much closer to the seacoast than the original discovery. At the beginning of this year prospectors learned that unimportant quantities of semi-liquid asphalt were seeping from small holes in the wall of a canyon near Villaba, but they believed the occurrence to be of little value, because of the small quantity of the material found. The fact that the whole rock face was impregnated with asphalt was not detected previous to the official investigation. Although the deposit has not been explored by artificial openings, it is well exposed by the deep canyon and there is little question that the quantity of material present is to be measured in thousands of tons. The upper 20 feet of the rock asphalt, which occurs in thick beds, is a bituminous sandy limestone, while an equal thickness at the base is bituminous sandstone.

*From Daily Consular and Trade Reports.

Taking into consideration the first findings and the results of the subsequent prospecting, outcrops of various grades of asphalt, including solid, viscous, and liquid types, together with seeps of the petroleum, from which the asphalt has been derived, are known to occur over an area about 12 miles long. The more important discoveries, however, are limited to an area about 8 miles long.

It may be possible to use the rock asphalt at Villaba as a paving material. Chemical analyses now being made will throw more light on this possibility, but the question must be determined finally by actually paving a section of some street with this material. There is reason to believe that the Bureau of Public Works in co-operation with the holders of the mineral claims will make such an experiment. If the material can be successfully employed for paving, it will undoubtedly find a considerable market in the Philippines themselves, and it might be exported to the China coast and to Japan. Rock asphalt is not extensively used as a paving material in the United States, largely because of the abundance and consequent cheapness of true asphalt. In Europe, however, there are millions of square meters of rock asphalt pavement. Indeed, in France and Italy rock asphalt is the standard paving material. Italy, for instance, uses annually about 200,000 tons of rock asphalt, valued at more than half a million dollars.

RADIUS OF STREET CORNER CURVES

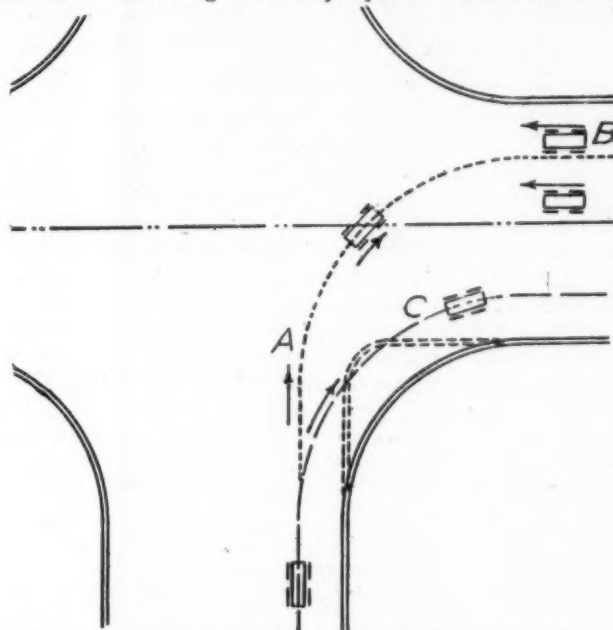
Where Long Radius for Curb at Street Corners is Desirable, and Why—Effect Upon Automobile and Other Speedy Traffic

On streets where the entire width of the roadway is necessary for traffic, a sharp corner to the curb is a serious objection, since it is impossible for any wagon to turn a sharp corner, but the wheels must follow a curved path, the radius of which must increase with the length of wheel base of the vehicle. Consequently, in business sections of the city or where the roadway traffic is considerable, curved corners with long radius have been found necessary. Except for appearance, however, there is little necessity for using curves of long radius for curbs at street corners where most of the traffic is slow-moving horse-drawn and the amount of traffic is so small as not to demand the use of the entire width of the roadway.

Most cities and towns, however, have experienced the necessity for going to the expense of substituting long radius curves for many of the sharp corners which were originally constructed in the majority of cases. Not only the crowding of the roadway, but also the speed of the vehicles, demands such long radius, since the faster the motion of the vehicle the flatter the curve at which it is possible for it turn the corner. Consequently, the advent of the automobile has made it necessary to provide the rounded corners on other than the business streets, and especially those where there is any amount of fast automobile riding. The reason for this is indicated by the accompanying cut. Given a curved corner with a radius of not more than a foot, and a vehicle on the right side of the street cannot begin to turn until it comes practically opposite the corner. This throws the path of the vehicle, on the intersecting street, away from the curb a distance equal to a radius of the curve followed by the vehicle. It is found that, with speeds which are permitted in most cities, this radius cannot be cut down much below 12 or 14 feet with safety. If, however, the radius of the curb corner be made 12 or 14 feet, the vehicle can begin turning when it is opposite the point of curvature and thus follow parallel with the curb and

remain on the right hand side of the street in turning to the right; whereas, if it could not begin turning until it reached the curb line of the intersecting street, it would be almost impossible for it to avoid infringing the traffic laws and passing beyond the center of the street in making the turn.

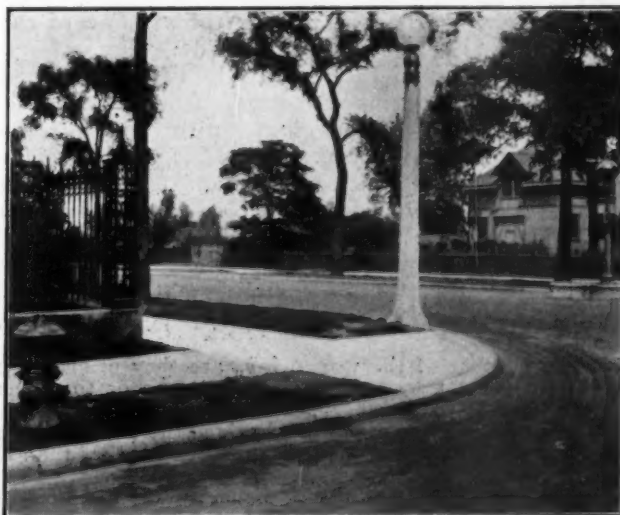
Changes along this line and as indicated by the accompanying sketch have been made at several street intersections in Chicago, notably at Lincoln Parkway, at Diversy Boulevard and at Devon and Evanston avenues. In this sketch the double dotted lines show the curb for the short radius corner, while the full lines show the radius as now constructed. Under the old construction the driver traveling with any speed would follow the



EFFECT OF SHORT RADIUS AND LONG RADIUS CURB CORNERS.

line A when turning into the intersecting street, the danger of which is shown by the location of the two cars B coming toward him. When it is possible for him to begin turning further back, however, he can follow the route C, thus remaining on the proper side of the center line of the street. This is especially important when the turn is made into a narrow street.

There is in the proposed construction the disadvantage



CORNER OF LINCOLN PARKWAY AND DIVERSEY BOULEVARD.
Wheel Markings Show That Auto Can Hug Long-Radius Curve.

that foot passengers have a longer crossing of the roadway to traverse and are also required to step off of and on to a curb set diagonally with their line of travel, which is not as convenient as when the curb is at right angles to such line. The rights of the pedestrians, of course, should be considered, and at corners where there is not much travel turning from one street into another, or where the pedestrian travel is more abundant than the vehicular travel, it might not be desirable to introduce the long-radius curb corners.

SEWAGE WORKS OPERATION

Arousing Public Interest in Disposal Plants—Control by State Health Boards—Data Required and Method of Obtaining Them

The Committee on Works Operation and Analytical Methods of the American Public Health Association stated in its report at last week's convention that its recommendations made in 1914 (published in our issue of December 17th, 1914), have received no adverse criticisms, and it repeats them, reaffirming "the advisability of the use of these tests as far as possible in all laboratories connected with the operation of sewage treatment works." "It is surprising," says the report, "to learn how few sewage works in America are under competent supervision and provided with laboratory facilities."

One of the reasons for this lack of interest on the part of the public is that in many cases sewage treatment works are installed for the good of the commonwealth, and the citizens of the town do not personally realize the resulting benefits. Another reason lies in the fact that sewage works are frequently objectionable and untidy; this is due to the lack of appropriation of sufficient funds for maintenance, and sometimes to carelessness.

With modern processes and proper operation it is possible to reduce objectionable sights and odors to such a point that only a prejudiced visitor will be dissatisfied. A reasonable amount of money spent in laying out flower beds, shrubbery and trees, and in taking care of the grass and walks will be more than returned in the added interest in the plant by its operators and by the citizens.

Your committee begs to call the attention of designing engineers to the importance of including the sodding or seeding of slopes and planting of trees and shrubs in the contracts for the construction of sewage treatment works, for new works are too often left in a very unsightly condition with respect to landscape embellishments.

Laboratory control for small works is a difficult problem. If there are several plants in one neighborhood, one expert operator with a laboratory may be employed to look after all of them, making the expense of each quite small. It is recommended that designing engineers call the attention of their clients to the necessity and economy of such operating control. In cases where this is impossible the state board of health should exercise such supervision as it can. This board should aid by advice those plants which need it, and have power and facilities (like New Jersey and Kansas) to compel all plants in the state to produce satisfactory results. To do this intelligently, the board must know the methods of operation and results accomplished at each plant.

To obtain these data, information is required on the following:

1. The purpose of the works, i. e., are they primarily intended to protect sources of water supplies or to prevent the creation of nuisance.
2. The construction of the works, i. e., the details of each process which influence operating methods, rather than the stability of the structure.
3. The quantity and character of the sewage to be treated.
4. The methods of operation and results accomplished.

The data concerning the construction of the works should be obtained by the State Board of Health, either through plans submitted for approval supplemented by record plans after the works are constructed, or, in cases where the board is not yet clothed with such authority, by

means of inspection and measurement. Any changes from the original contract drawings or alterations after the plant is in service should be especially noted, as these may be vital information in connection with operating policies.

It is presumed that in those states where the law does not require approval of sewerage works before construction, the number of plants is small and hence there should be no difficulty in obtaining the needed data.

The records of operation and results accomplished should be furnished the state by the town or owner upon blank forms prepared by the town officials or the owner in conjunction with the state officials.

It is practically impossible to recommend a standard form of report blank to cover all the many types of apparatus used in sewage treatment. If, however, the report form for each works in a state is prepared to meet the local needs, it can still contain essential data so recorded that reports of operation of similar types of apparatus in different works will be in identical form for comparison.

In preparing such forms, it should be borne in mind that the small works are generally operated by employees lacking a technical education, and, therefore, clearness and simplicity should be obtained by having as much as possible printed, leaving only figures to be filled in.

The reports should be printed on sheets either 6½ x 11 inches or of such size as to conveniently be folded to 8½ x 11 inches, so as to facilitate filing in standard letter files. It would be desirable to have the sheets made up in the form of pads, so that the operator, by placing carbon paper beneath the top sheet, could obtain a copy.

The record sheets should be signed by the operator and mailed at monthly intervals to the office of the State Board of Health.

It is again desired to call attention to the importance of recording essential data. In the majority of sewage treatment works no provision is made to obtain a record of the rate of flow to the plant even though such information is vital to proper operation. The committee strongly recommends that engineers in designing new works provide means for easy measurement of the flow and that measuring devices be installed in existing works not now so equipped.

When the record forms are printed, blank spaces should be left at convenient places where it may be desired to put figures resulting from computations by the state authorities.

For example, if the operator reports that sludge was placed on drying bed "D" to a depth of 7 inches, the state official, knowing from the records the area of the bed, can compute the number of cubic yards of sludge, which he would enter in the blank space mentioned.

The committee consists of Lewis I. Birdsall, F. E. Daniels, C. A. Emerson, Jr.; C. B. Hoover, H. C. McRae, Richard Messer, and W. L. Stevenson, chairman.

AMSTERDAM STREET FLUSHER DECISION.

A suit against the city of Amsterdam, N. Y., by the Sanitary Street Flushing Machine Company for infringing on its patent has been decided in favor of the company by the United States District Court. The court, bound by the decision of the Circuit Court as to the validity of the Ottofy patent and the conditions under which a city infringes (see *Municipal Journal* for July 1st, 1915), finds that Amsterdam "has either yielded to temptation or by carelessness so adjusted the pipes and nozzles of the machine as to infringe;" which infringement could have been avoided by keeping the angle between nozzle and pavement at more than 20 degrees.

DULUTH'S AERIAL TRUCK.

In our issue of August 26, on page 315, we published a photograph of a Seagrave aerial truck with a caption stating that it belonged to the Duluth fire department. We are informed by Joseph Randall, chief of the Duluth Fire Department, that this is a mistake, and that the aerial truck which they purchased last December was an American-La France, and that they have no Seagrave aerial. Just how the wrong photograph came to be used we cannot now determine, but we wish to correct the matter as far as possible by this official statement of the facts.

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CHANGE OF ADDRESS

Subscribers are requested to notify us of changes of address, giving both old and new addresses.

Contributions suitable for this paper either in the form of special articles or of letters discussing municipal matters, are invited and paid for.

Subscribers desiring information concerning municipal matters are requested to call upon MUNICIPAL JOURNAL, which has unusual facilities for furnishing the same, and will do so gladly and without cost.

SEPTEMBER 16, 1915.

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The War and Municipal Work in Europe.

Anyone basing his opinions upon European news as published in our daily papers would be justified in thinking that nothing whatever was going on or thought of in any of the belligerent countries except the war. But city life must be following in a general way its usual routine, since more than ninety per cent of the population continues to live at home.

In contrast to this, the August 25th issue of a London paper devoted to engineering and contract work, "Contract Journal," must be examined very closely to find any hint at unusual conditions. It discusses the system of weights and measures used in India, gives a retrospect of the work of the Royal Commission on Sewage Disposal (the statement that this went out of existence last November during the battle of Ypres is one of the two or three references to the war), reports a meeting of the Institution of Municipal and County Engineers, etc., all quite as usual. Engineering papers of this country, under similar conditions, would discuss sanitation of camps, work of army engineers in repairing bridges, and the like.

In Germany also municipal work continues. Dr. Karl Imhoff, although serving as officer at the front, occupied a six weeks' leave of absence in completing some plans for a sewerage system so that the work of constructing it could begin. Even in the cities of Belgium and north-

ern France sewage disposal plants are being built by the German sanitary corps.

The outcome of the war will be of tremendous importance; but the daily doings of the armies, reported by the page in our papers, mean little to the great majority of readers, and we hope the daily papers will cease to fill their swollen columns of foreign news with unread war cablegrams exclusively and will give attention to the non-military matters of interest and importance which are happening all unknown to us, like the retirement of the Royal Sewage Disposal Commission.

Road Construction by Convict Labor.

The use of convict labor on roads is by no means a new idea, prisoners of one kind or another having been used on this kind of work centuries ago in the old world, and the practice being well established in several of the Southern states. Those who have interested themselves in the subject, however, have noticed that a change has been gradually evolved in methods, resulting chiefly from changed ideas with reference to penology. Not more than a decade ago, states in which convicts were used for road and similar work seemed to have as their sole idea the securing of an income from the convicts, with a view to requiring them to support themselves and not lie in idleness at the expense of the taxpayers. At that time the convicts were almost invariably hired out to contractors, which system, as might readily be imagined, resulted in very serious abuses and ill treatment of the convicts.

During the past few years, however, with the undertaking by practically all of the states of large amounts of highway and other public work requiring a considerable amount of labor, the system of hiring the labor of the convicts to contractors has been practically abolished and the states have been using their labor directly under supervision of highway departments or prison authorities or a combination of the two. With this has come likewise a change in the treatment of the prisoners, both physically and morally. In most states where prison labor is used on road work, camps are provided which will measure up for comfort with those provided by contractors for free labor. Moreover, instead of employing a considerable guard of armed men to keep watch over the prisoners day and night, several of the states have adopted the "honor system," relying almost exclusively upon the word of honor of the prisoners that they will not attempt to escape and that they will use their best endeavors to render the state the best return which they can in the form of labor. The state, on its side, generally agrees to pay the convict a certain amount each day for his labors, and also to materially reduce the length of his confinement.

The above, of course, represents the extreme departure from the old methods, but several of the states have adopted this extreme. The experience of one of these is narrated at some length in this issue by the engineer in charge, and that of the State of Washington was described by the highway commissioner in our September 2nd issue. Both officials state that from the point of view of results obtained, the experiment has been satisfactory. Both also claim that the effect upon the prisoners is most encouraging, and that they are in much better condition physically, mentally and morally to take their position as honest citizens on their discharge, than are those which do not have the benefit of the healthful outdoor work.

From a financial point of view, however, the results are not as successful as many had expected. The reasoning that the prisoners had to be supported anyhow, and that all the work which could be obtained from them was clear gain has been found to be fallacious. The reason

for this is explained by F. G. Twitchell in his paper describing convict work in Arizona, in which he shows that the cost of feeding, housing and clothing the convicts, together with their transportation to and from the work and other incidental expenses, amounts to over \$1 a day per convict; it having been found that when putting in a good day's work on the highways a convict will require food costing several times as much as that consumed while idling in prison, and that the warmer and stronger clothing required and the harder wear which it receives causes this item also to be considerably increased. It is hardly to be expected that as much work could be performed per day by convict as by free labor, partly because of the difference in incentive and partly because of the fact that many of the convicts have not been accustomed to hard manual labor and are physically incapable of doing as much as would the free labor which a contractor would employ.

Everything considered, however, and the experiences of states both north and south, east and west, it appears to be the almost universal conclusion that the use of convicts is beneficial both to the men themselves and to the highway department if employed within reasonable limits and under wise restrictions.

Institute of Paving Brick Manufacturers.

In our issue of September 9, page 400, we noted the formation of an organization of paving brick manufacturers and stated "that the next meeting will be held at Alton, Ill., on September 22." We have just received a notice that the place of meeting has been changed to Galesburg, Ill., at the plant of the Purington Paving Brick Company, the date being the same.

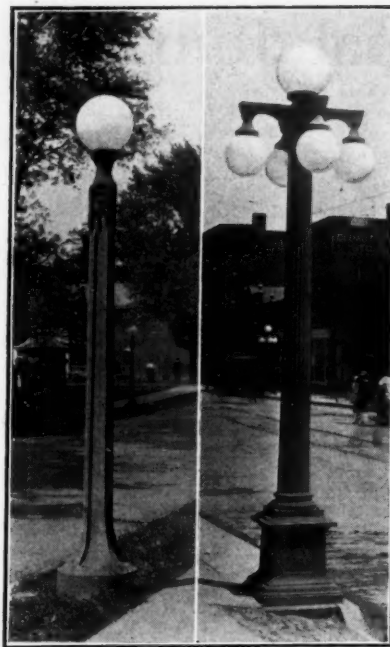
STREET LIGHTING IN SENECA FALLS.

During the past five years Seneca Falls, N. Y., has been making progress along all lines both as to physical betterment of the municipal utilities and in business and social directions. During this time it has installed a complete sewerage system and a water filtration plant, has paved more than six miles of streets, opened two public playgrounds, established a completely equipped hospital and improved its street lighting system and organized a live Chamber of Commerce.

One of the first improvements undertaken was the lighting of streets. In 1911 the lighting of the business section was effected by arc lamps hung over the center of the street at intervals of 400 feet. On the less important streets and in the residence sections 32-candle-power carbon lamps were used, suspended from pole brackets and spaced at intervals of about 250 feet on each side of the street. These lamps have been replaced in the business section with ornamental cast iron standards carrying five lights each, while in residential streets a single light carried on a reinforced concrete post has been made a standard. In the outlying districts, the bracket support is still used, but the old 32-candle-power carbon lamps have been replaced with 40-candle-power series mazda lamps and the distance between lights has been materially decreased.

The five-light units consist of 60-candle-power mazda lamps, G. E. 6.6 ampere, series. All five lights burn from dusk until 10:30 p. m., when the four lower lights are extinguished, the upper one burning all night. These five-light standards are spaced 100 feet apart on each side of the street, staggered so that they come at 50-foot intervals.

The single lights on the concrete posts are also 60-candle-power mazdas, spaced 200 feet on each side of the street and staggered, giving an actual interval between lamps of 100 feet. The concrete standards, one of which is shown in the accompanying illustration, are 6 inches



SENECA FALLS LAMP STANDARDS.

square extreme dimensions at a point about 6 feet above the ground. A reinforcing bar of $\frac{1}{2}$ inch square steel is carried down each corner, while a 2-inch steel conduit is carried up from the bottom of the post to the top and aids in strengthening it. Over the top of the concrete post fits a bronze headpiece covering about eleven inches of the top of the concrete post and carrying the lamp and globe. At the bottom, the post is extended below the surface of the ground in a shaft 3 inches square and 3 feet deep. About 6 inches below the ground surface the steel conduit which is embedded in the center of the post is given a right angle turn and brought out through the underground shaft and connected with the underground wire conduit. The concrete is composed of three parts of sharp gray sand screened through a quarter-inch mesh, to one part of Portland cement. The posts were cast in cast iron forms which were obtained from the Ricker Manufacturing Company of Rochester at a cost of \$12 each. The bronze top also was obtained from the same firm. The total cost of the post complete was about \$22. The weight of one of these posts is about 950 pounds.

There is about six miles of underground wire in connection with the street lighting system, carried in 2-inch fibre conduits laid in concrete built six inches square. The cable used is lead armored, varnished cambric, 5,000 volts. The underground conduit is used in connection with the ornamental street lighting, which is extended over six miles of streets. The non-ornamental lighting covers an additional fourteen miles of streets. There are 25 of the five-light standards, 166 of the single-light standards and 238 bracket posts.

The expense of installing all of the ornamental posts has been borne by the local lighting company and the entire lighting system is owned by the company. The yearly charge by the company for each 5-light post, operated as described above, is \$45 a year. The charge for the single ornamental 60-candle-power lamps burning all night is \$24; and that for the 40-candle-power lamps suspended from brackets is \$18 a year.

NEW SAWDUST PAVING BLOCK.

A new kind of paving material was laid upon one of the streets of Kissimmee early in July of this year, at a point where it receives very hard wear. It consists of blocks 3 by 4 by 9 inches, made by mixing cypress wood sawdust with hydrolime (which preserves and binds the material together) and compressing it under 60 to 80 tons pressure. The blocks weigh about five pounds each. The pavement is said to give out no more sound than wood block and is believed to be more durable by the manufacturers, the Everglade Cypress Company, which calls it "cypress wood tex" paving block.

The WEEK'S NEWS

Government Post Roads—Paving in Fort Worth—Grade Elimination in Pennsylvania—New Highway Association—State Bureau for Sewage Questions—Septic Tank Wrecked by Explosion—Electric Pump for La Porte, Ind.—Minneapolis Loses Filter Suit—Montebello Filters Opened—Portland, Ore., Lacks Water—County Water Supply in New Jersey—Electrolysis Mitigation—Binghamton's New Fire House—Pueblo's Municipal Garage—Bats Reduce Mosquitos—Court Decides Assessment Methods.

ROADS AND PAVEMENTS

Government Building Post Roads.

Washington, D. C.—Four hundred and sixty-five miles of experimental post roads of different types, benefiting twenty-eight different counties, are now under consideration in thirteen states, which are co-operating with the federal government. These roads, which are being built under the supervision of the Department of Agriculture, are authorized by the act of Congress of Aug. 24, 1912, which appropriated for the Postoffice Department \$500,000 to be expended in an experiment to test out the value of improved rural carrier routes. The federal government pays one-third and the state or county benefited must defray two-thirds of the cost. The entire sum of \$500,000 of federal funds and \$1,000,000 of local funds will be expended under the supervision of federal highway engineers.

Paving Work in Fort Worth.

Fort Worth, Tex.—City Engineer Von Zuben's annual report to the city commission on the work of the engineering department for 1914, shows 47,148 square yards of paving was laid in the course of the year at a cost of \$111,911.08. Of this amount the abutting property owners paid out \$67,975.72, the city \$27,465.41, and the Northern Texas Traction Company \$16,469.95. Patching pavement cost \$6,481.01 in 1914, the total area patched being 4,963.78 square yards. Seven and one-third miles of streets were graded and graveled at a cost of \$35,565.71. Eight-tenths of a mile of storm sewers were constructed at a cost of \$7,492.55 and nearly two miles of sanitary sewers was constructed. Curb construction totaled 28,754 lineal feet, and combined curb and gutter construction 200 lineal feet. The cost was \$9,677.75 for work done on streets that were being paved. Of this amount the city paid \$4,403.05 and the property owners \$5,274.70. The cost of the curb and gutter construction on streets not being paved was \$20,530.32, of which the city paid \$255.39 and the property owners \$20,274.93. The grand total of curb and gutter cost was \$30,208.07. Sewer extension cost \$5,699.60 and sewer maintenance \$7,144.97.

City Buys Paving Equipment.

Dowagiac, Mich.—The city has commenced street paving work, using the new Koehring mixer recently purchased. Sixteen men are employed at present in the gang and an average day's work is about 900 yards. This is the first time the city has done any paving work; but if the results are as good as expected, it is probable that but little more work will be contracted.

Grade Crossing Elimination in Pennsylvania.

Harrisburg, Pa.—Public Service Commissioner Monaghan at an executive session of the commission has called the body's attention to its responsibility under the law for the existence of unprotected grade crossings throughout the state. As a result, the commission in the very near future, after receiving reports which it has called for, will announce a line of policy which will aim to procure the early elimination of every dangerous crossing in the state. In the meantime, gates, bells or watchmen will be required. Commissioner Monaghan contemplates the careful examination and classification of all grade crossings, both with respect to the danger and with respect to the nature of the

protection to be afforded. Chairman Ainey states that: "There are upward of 10,000 unprotected grade crossings in Pennsylvania. Their elimination would cost the railroads and municipalities concerned \$300,000,000. The nature of these crossings varies so widely that each must be investigated. Courts and legislature have declared against the grade crossing evil, and the latter has placed upon this commission the responsibility of administering the law relating to it."

Erie, Pa.—An appropriation to pay its share of the expense of grade crossing elimination here has been authorized by the Pennsylvania Railroad. The New York Central Lines will determine ways and means of financing the project within a month. This has been announced by Mayor Stern, who received from Charles H. English, city solicitor, copies of the agreement between the railroads and the city for the abolition of six grade crossings and the construction of as many subways and a new station at an estimated cost of \$2,000,000.

New Highway Association Formed.

Chicago, Ill.—Organization of the International Pavedway Association, formed to promote an automobile highway from the Mexican to the Canadian border, was perfected here last week. Selection of a president was deferred. Other officers were chosen as follows: Vice-president, H. B. Kenning, St. Louis; managing director, H. G. Spaulding, South Bend, Ind.; secretary, L. M. Vaughn, Danville, Ill., and treasurer, Harvey C. Adams, Danville, Ill. Among the directors named are: William Sparks, Jackson, Mich.; S. D. Walden, Detroit, Mich.; C. C. Hanch, South Bend, Ind.; C. G. Fowler, Lafayette, Ind., and David R. Francis, St. Louis. The proposed route is as follows: Laredo, San Antonio, Austin, Waco, Fort Worth and Dallas, Tex.; Texarkana and Little Rock, Ark.; St. Louis; Springfield, Decatur and Danville, Ill.; Lafayette, Logansport and South Bend, Ind., and Dowagiac, Kalamazoo, Battle Creek, Jackson and Detroit, Mich. It was stated at the meeting that automobile clubs have provided the organization with \$100,000 for promotional work and that states and counties south of St. Louis have provided for about half the money needed for the Laredo-St. Louis section of the road. The road as planned will be 2,200 miles long, be paved with concrete or brick, cost \$20,000,000 and have a width of 12 feet south of St. Louis and of 16 feet from St. Louis to Detroit.

Lack of Funds Stops Highway Work.

Little Rock, Ark.—The highway force in the state department of improvements and highways has been reduced to Highway Engineer H. R. Carter and one assistant. Seven surveyors and draftsmen have been dismissed because there are no funds available with which to pay their salaries and necessary expenses. There are twenty-one applications from twelve counties for surveys aggregating 458 miles of road, which the department is unable to make because it has no funds. There is in the state treasury a total of \$25,129.08, derived chiefly from the automobile license, which cannot be used for any other purpose, and which will continue to accumulate until the 1917 legislature makes an appropriation that will authorize its use for the purpose for which it was intended. The department has already this year surveyed and assisted in the promotion of districts for over 400 miles of improved highway, and in many instances bonds have already been sold and the work is in progress. The Alexander law, under which these roads are

being built, has quadrupled the work of the highway department and has given an impetus to practical highway construction such as the state has never before known; but new work must necessarily stop unless the department has funds to carry it on. Governor Hays has been requested to issue a proclamation enabling the department to use \$15,000 of its own funds; but as yet he has given no assurance that he will do so.

SEWERAGE AND SANITATION

Bureau to Aid in Sewage Problem.

Berkeley, Cal.—Questions of water supply and sewage disposal in the various cities and towns in the state will be considered by Chester G. Gillespie, the new director and chief engineer of the bureau of sanitary engineering just established by the State Board of Health at the University. The prime purpose of Gillespie's work will be co-operation between the state and individual communities to reduce the danger of typhoid infection and to instruct the farmer and rancher on proper sanitary methods, so that streams may not be contaminated and milk and milk cans exposed to infection.

Septic Tank Wrecked by Explosion.

Pasadena, Cal.—Sewer gases, ignited by a weed fire started by a workman, exploded and blew up 6,000 square feet of heavily reinforced concrete cover on a septic tank at the city farm, almost wrecking the tank. Repairs which must be made before the tank can be used again will probably cost more than \$3,000. The tank was partly in excavation, banks being thrown up around the remainder and a light fill on top. From the intake box to the south end the tank is 295 feet long, the main tank being 230 feet long, and 114 feet wide. The cover is of reinforced concrete $3\frac{1}{2}$ inches thick at the weakest place. On the west bank of the tank, weeds had been growing and, in order to get rid of them, one of the farm workmen started the fire. No one was injured by the explosion.

Sewage Disposal Plant Works Well.

Camden, N. J.—The miniature sewerage disposal plant constructed under the direction of Street Commissioner Sayers at Woodlynne is operating in a satisfactory manner. There is now no question but that the vexatious problem involving the disposition of the deleterious substances from the recently constructed Haddon and Ferry avenue sewer has been solved and that it will no longer be a subject of controversy as between Camden, Woodlynne and Collingswood. The plant consists of a concrete basin eight feet deep, into which the raw sewage flows. This goes through three screens of varying fineness and then into a septic tank of 6,000 gallons capacity, from which the almost pure water flows off. The solid substance is cleared away daily. Mr. Sayers is satisfied that this small plant will provide for the needs in that section for several years in the future at least.

WATER SUPPLY

Install New Electric Pump.

La Porte, Ind.—A new pump, direct-connected to a 150-h.p. electric motor, has been installed. This pump raises the capacity of the local waterworks to $7\frac{1}{2}$ million gallons per day, the new pump being rated at 3,000 gallons per minute. The cost of the installation complete was about \$1,350.

City Facing Water Shortage.

Ellensburg, Wash.—Ellensburg is facing another water shortage. Last winter the city was without light when the source of the city's water supply operating the municipal light plant froze up, and now the long hot dry spell of the summer has reduced the Yakima river so far below normal that the lighting system is seriously embarrassed. No arc lights in the city burn till ten o'clock, and but one-third of the cluster lights are used. The emergency steam auxiliary system has been forced into service. Superintendent Butler, of the light department, declares the situation to be the worst he has ever faced. No relief for at least two months is in sight.

City Loses Filter Suit.

Minneapolis, Minn.—Holding that the city of Minneapolis in the construction of its \$1,000,000 municipal filtration plant has infringed on two of the patent rights of Ira H. Jewell of Chicago, Judge Wilbur F. Booth of the federal district court has handed down a decision granting the plaintiff's petition for a permanent injunction restraining the city of Minneapolis from operating the filtration plant and ordering an accounting in damage and for the plaintiff's costs and disbursements in the litigation which began two and a half years ago. Two alternatives are possible. The city may change the entire system of its plant. If this is not done the city may pay royalties to Mr. Jewell. The Minneapolis council has consulted a number of water engineers and patent attorneys before deciding to build the plant, despite the protests of Mr. Jewell. The two patents which are held to have been infringed are the "filter bottom" and the "control system," the latter regulating the amount of water delivered and the washing system. About four months were required to collect the testimony and five days were spent in arguing the case. Minneapolis is said to have spent approximately \$30,000 in fighting the suit. The restraining order did not go into immediate effect owing to the hardship that would be produced by the lack of water. The case will be appealed by the city.

Montebello Filters Opened.

Baltimore, Md.—The Montebello filter plant was formally opened for operation Monday, September 13. The municipal band furnished music and several addresses were given by engineers and officials. An inspection of the plant, a complete description of which was given in our issue of April 22, followed. The accompanying illustrations show a portion of one of the coagulating basins, the center passage between the head house and the filter building and



CENTER PASSAGE. FILTER BUILDING IN REAR.



CHEMICAL FEED CONTROLLERS.

the chemical feed controllers which control the rate of application of the chemicals.

Water Plant Profitable.

Pasadena, Cal.—A financial report recently issued by the water department shows that, exclusive of the sum of \$112,830.60 spent in the year on new construction and extensions, the water department made \$89,282.68 as the year's surplus. That is, if there had not been the necessity for new work and extensions, the city would have on hand a surplus of nearly \$90,000 from the water department, but as it is, over \$22,000 more was expended on new construction than the surplus would pay for. The cost of operation makes a most favorable comparison, it being but 24.2 per cent. of the total revenues. While the surplus is \$23,958.04 more than that for the fiscal year previous, and the revenues is \$10,380.65 higher, the actual cost of operation and maintenance is \$14,122.66 less.

Water Supply Short.

Portland, Ore.—Fifty-six million gallons of water, the entire flow of the Bull Run at the present time, is being brought to the city through the two conduits. The water in the stream is the lowest for years and unless rains come shortly it will become much lower and the city may suffer a serious shortage of water. At the present time nearly the entire amount of water flowing through the conduits is being consumed in the city. There is not even sufficient water in the stream to fill the pipelines to capacity, as the flow at the present time is only 56,000,000 gallons each 24 hours and the capacity of the two conduits is about 10,000,000 gallons greater. The extreme lowness of water in Bull Run is due to the dry season. Last winter the rainfall was light; also the snowfall in the Bull Run watershed. Ordinarily the snow falls in great depth throughout the entire reserve, and packing under the giant forest trees in the underbrush and fern, gradually melts throughout the summer. By July 1 practically all the snow had melted in the reserve and the flow of water now is dependent entirely upon the springs.

May Have County Water Supply.

Trenton, N. J.—The State Water Supply Commission has sent a letter to all the municipalities of Monmouth County, with the exception of Long Branch, which has its own water supply plant, and also to some of the communities in Ocean County regarding their attitude toward having the commission authorize an investigation to ascertain what development would be necessary to provide these places with one general water supply system similar to the Wanaque watershed scheme now being discussed for Newark and a number of North Jersey cities and towns. Among the municipalities to which the communication has been sent are Asbury Park, Ocean Grove, Bradley Beach, Neptune City, Avon-by-the-Sea, Belmar, Como, Spring Lake, Manasquan and Point

Pleasant. The members of the commission have looked into the water supply question in this part of the state and find that the great summer population of most of these cities and towns, which are seaside resorts, renders the solution of this question a serious one, and one which must be worked out within a very short time. The commission therefore has in mind a joint municipal plant similar to the Wanaque, up the state, for the Monmouth and Ocean County section. The commission is urging early action by the municipalities involved, as the question of fire protection is seriously involved. It is estimated that the cost of investigation to determine the possibilities of a joint municipal water supply would amount to about \$2,500, which would be borne by the different governments in proportion to their interests. The normal population of the municipalities interested in the matter of a joint water supply is in the neighborhood of \$50,000, which, however, is increased many times during the summer season.

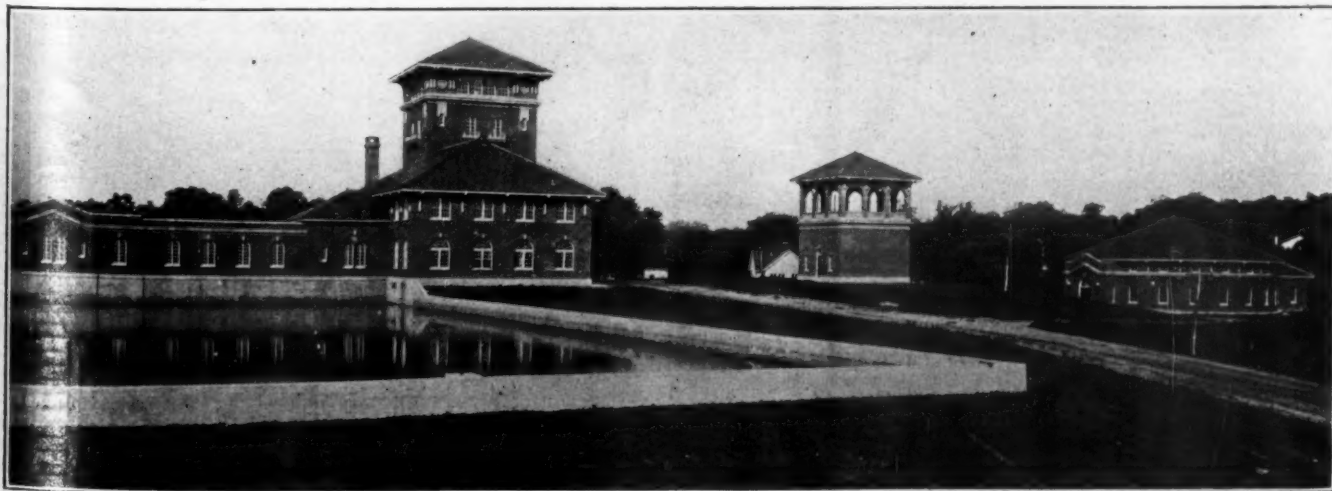
STREET LIGHTING AND POWER

Municipal Electric Plant Profitable.

Columbus, O.—A report made under the regulations of the Ohio public utilities commission by New York and Cleveland expert accountants, shows that during the sixteen years the local municipal plant has been in operation \$286,658.37 has been saved the taxpayers. The cost to the city of the plant since its establishment is put at \$1,301,078.56 and it is figured that the plant's services in lighting the streets, based on the Cleveland rate, is \$1,559,489.01. The same charges were entered against the municipally owned company as against any private concern, such as depreciation, interest, rent, and so forth.

Big Power Project Started.

Peach Springs, Ariz.—The project of harnessing the power of the Colorado River in the depths of the Grand Canyon has passed the visionary stage. The United States Department of Interior has granted permission to the promoters of the scheme to make the preliminary surveys for the proposed six dams that are to be built across the river in the canyon, also for the sites of the reservoirs and hydro-electric plants that are to be constructed. J. B. Girard, city engineer of Phoenix, who conceived the project, will have charge of the surveys. It is stated by Mr. Girard that the first dam will be under construction within the next eighteen months. The sites of this structure and of the others that are to be built are just north of Peach Springs. In its entirety the project involves the construction of the largest hydro-electric plant in the world. It will be made up of six units, each operated by the water supply obtained from the building of a separate dam. The whole plant will have a total capacity of 400,000 horsepower. It is claimed that this prospective available electric power is but a small part



ONE OF COAGULATING BASINS, HEAD HOUSE, AERATOR GATE HOUSE AND PUMPING STATION.

of the total electrical energy that might be developed at other points in the Grand Canyon by the construction of dams and the harnessing of the stream. The first dam will be located in what is known as Diamond Canyon. It will create approximately 50,000 horsepower of electrical energy. It is stated that the beauties of the Grand Canyon will in no way be injured by the dams and hydroelectric plants. While the power that is to be generated by the big system will be used by railroads and various kinds of industrial plants, one special purpose to which it is to be put is that of manufacturing calcium nitrate on a large scale.

Electrolysis Mitigation in Elyria.

Elyria, O.—Changes in the feeding distances of the power house are recommended in the preliminary report on electrolysis mitigation made by Burton McCollum and K. H. Logan, in the form of a paper which has been issued by the Bureau of Standards, Department of Commerce. From data furnished by the city and the Cleveland, Southwestern and Columbus Railway Company the feeding distances of the Elyria power house are found to be too long and the potential gradients too high. It is recommended that the gradients be reduced to 0.3 volt per 1,000 feet average for 24 hours by the addition of a substation, the interconnection of the tracks of the two electric railways, and the installation of an insulated return-feeder system. The saving in power due to the reduced feeding distance is shown to be more than sufficient to pay the annual charges on the additional investment of \$34,373. The plan provides for 800 kilowatts additional substation capacity, improved operating conditions, and substantial elimination of electrolysis.

City Saves on New Lighting Contract.

Pittsfield, Mass.—As a result of the new contract arranged with the Pittsfield Electric company by the city the sum of \$918 out of the money provided this year in the budget for street lighting will go back into the general fund in the city treasury. This is due to the fact that the city will have to pay less under the new contract than under the old one. There are 1280 bug lights of 60 candle power each, costing the city \$15.50 a year, each a reduction of 90 cents a lamp. There are 159 lamps of 600 candlepower, each costing \$65 under the new contract against \$75 under the old agreement, a saving of \$10 a lamp. The candlepower of the bug lights under the new contract is double that under the old and the candlepower of the arcs is increased 30 per cent. Under the present system the arcs are changed three times a year. When the old contract was signed five years ago, there were 800 incandescent lights and 125 arc lights. Today there are 159 arcs of 600 candlepower each, 64 of 1,000 candlepower each and 1280 bug lights of 60 candlepower each. On the 10-year contract the city saves \$29,000 in ten years over the old contract, which is \$2,900 a year. This means that \$14,500 is saved in five years. If the city had entered into another five-year contract, it would have saved only \$4,000 over the old contract. Thus by entering into the ten-year contract the city saves \$10,500 more in five years than it would under a five-year contract. Following are prices paid in other cities for arc lamps and 60-candlepower incandescent lamps under five and ten-year contracts: Springfield, 10-year contract, 1,200 arcs, \$70 each; 400 incandescents at \$15 each; Fall River, 5-year contract, 875 arc lamps at \$80.30 each; 251 incandescent lamps at \$20 each; Lynn, 5-year contract, 314 arcs at \$80.30 each; Worcester, 10-year contract, 1,059 arcs at

\$80.30 each; 2,106 incandescents at \$23.50 each; Greenfield, 5-year contract, 86 arcs at \$78 each; 194 incandescents, \$22 each; New Bedford, 5-year contract, 466 arcs, \$80 each; 704 incandescents, \$18.25 each; Brockton, 5-year contract, 224 arcs, \$85 each; 1,548 incandescents, \$19.62 each; Lowell, 5-year contract, 721 arcs, \$80 each; 569 incandescents, \$21 each; Haverhill, 5-year contract, 175 arcs, \$86.40 each; 349 incandescents, \$18.72 each; Fitchburg, 10-year contract, 300 arcs, \$86.40 each; 502 incandescents, \$21.60 each.

FIRE AND POLICE

New Combination Arrives.

Rome, N. Y.—The new American-LaFrance combination hose and chemical has arrived. It carries 1,200 feet of hose, has a 40-gallon chemical tank, 200 feet of chemical hose, two 3-gallon Babcock extinguishers, a 20-foot extension ladder and a 12-foot roof ladder. It will be located at No. 2 engine house.

Motor Tractor Accepted.

Bridgeport, Conn.—The city officials have accepted the motor tractor recently installed on Engine No. 7 after putting it through tests for speed and hill climbing ability. It made an average of 25 miles per hour on the level and 14 miles on several of the steep hills in the city. There are now 22 pieces of motor apparatus in the city.

Atlantic City Boardwalk Fire.

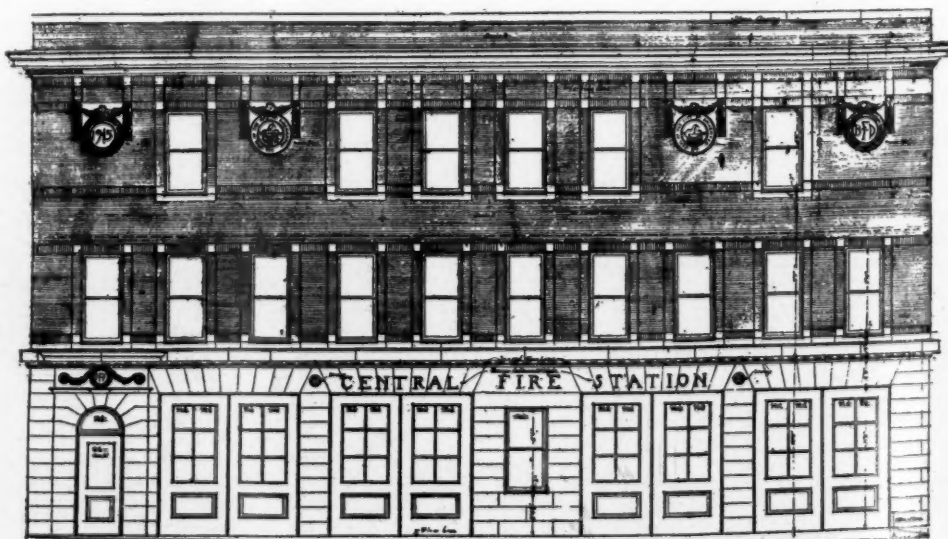
Atlantic City, N. J.—Following the boardwalk fire, the city commissioners are considering the advisability of installing a high-pressure salt-water main along the beach front. While there was at all times sufficient pressure and water during the fire, it is felt by some, including Mayor Riddle, that additional protection should be provided. Some time ago the mayor obtained estimates and found that a complete high-pressure main, with engines, could be installed from Maryland to California avenue for about \$100,000. The fire, which destroyed buildings owned by Mayor Riddle, did about \$125,000 damage. There were some exciting rescues and a few minor injuries were sustained.

New Central Station for Binghamton.

Binghamton, N. Y.—The accompanying illustration shows the front elevation of the new fire department headquarters which will be erected on Carroll street. The structure was designed by Walter H. Whitlock, supervising architect.

New Pumper Tested.

Girard, O.—The American-La France motor pumper received a short time ago has been tested. Drawing water through two lines of hose, each 250 feet long, a pressure of 100 pounds at the engine and 64 pounds at the nozzle was obtained, the machine throwing 600 gallons of water a



BINGHAMTON'S NEW FIRE HEADQUARTERS.

minute. It had been guaranteed by the manufacturers to throw 500 gallons a minute. Following this test, the machine was taken to the river, where the water had to be lifted about fifteen feet. A pressure of 120 pounds was obtained at the engine and 59 pounds at the nozzle. Five hundred and fifteen gallons of water were pumped in a minute.

May Motorize Omaha Department.

Omaha, Neb.—The city commissioners are considering the expenditure of \$66,500 a year for four years, or a total of \$266,000, for motorizing the fire department and installing a standard fire alarm system. Commissioner Withnell has been directed to procure estimates of the probable expense and terms which may be obtained for deferred payments on the alarm system.

MOTOR VEHICLES

Trucks for Prisoners on Road Work.

Sacramento, Cal.—The State Highway Commission has purchased two large auto trucks to be employed mainly in the transportation of prisoners to and from State highway camps. When not transporting convicts eligible to work on the state roads the trucks will be converted into freight trucks and will be used in provisioning the several camps which may be maintained in the state. The first truck-load of equipment and other supplies has left for northern Mendocino county, where a crew of twenty-five convicts are at work on a ten-mile strip of state highway located in the Rattlesnake Creek region.

No Tax on Municipal Autos.

Lansing, Mich.—Under a ruling of the attorney-general all motor vehicles owned and operated by municipalities are not taxable under the new automobile tax law. The state's legal adviser, however, says in his opinion that a municipality should devise some method of identification in case of accidents and thinks that each municipality can prepare a tag system of its own so that the ownership of the motor vehicle can easily be determined. In case of non-residents taking out a license where no known Michigan home is designated, the full tax reverts to the state and no county is entitled to one-half the tax. In case a foreign corporation doing business in the state takes out license and a certain Michigan office of the corporation is designated, the county in which such office is located is entitled to one-half the tax paid to the state.

New Municipal Garage and Machine Shop.

Pueblo, Colo.—At a cost of about \$4,000 a new city garage and machine shop has been constructed within the enclosure of the city corral. It is designed to care for all the auto repair work in all departments of the city which use altogether about 20 machines. Guy Park, who, ranking as assistant fire chief, was in fact chief mechanic of the fire department, has been placed in charge of the new department and will have complete supervision of the city's motor apparatus, which will include the big motor trucks of the fire department, that branch of the municipality having abolished the last horses some ten months ago, those of the street, health and police departments. The machines have been piling up large repair bills, and after a conference between the city commissioners, Mr. Park and A. W. Olson, superintendent of the street department, a fully equipped machine shop was decided upon. The building is 50 by 65 feet and is of solid brick and concrete construction. It is equipped with a hot-water heating plant, a storehouse and a 350-gallon gasoline system, thus affording the city a chance of buying fuel wholesale. In the immediate future lathes, a drill press, a milling machine, grinding

machine, a forge, work pit and other appliances will be added. Complete equipment for the new shop costing more than \$1,000 has already been purchased by Commissioner J. Knox Burton and Chief Mechanician Guy Park.

MISCELLANEOUS

To Cut New York's \$300,000 Telephone Bill.

New York, N. Y.—With a view of determining whether any reduction in the cost of telephone service to New York City, now amounting to about \$300,000 annually, can be effected without detriment to the public interest, Mayor Mitchell and Controller Prendergast have directed that an intensive study of the situation be made. The investigation will be in charge of the following committee of city employees: Putnam A. Bates, Electrical Engineer in charge of the Bureau of Fire Alarm Telegraph of the Fire Department, Chairman; Michael R. Brennan, Superintendent of Telegraph of the Police Department; Robert B. McIntyre, Supervising Statistician and Examiner, and Chester M. Gould, Assistant Engineer of the Department of Finance. It is intended to analyze the nature and value of the different classes of service rendered by the New York Telephone Company and to probe such points as routing of leased wires, the duct space allowed in the subways, the mechanical devices applied, etc., and also practical questions bearing on the department use of the city phones.

Two Cities to Be Merged.

Hammond, Ind.—A ten-year fight for supremacy between East Chicago and Indiana Harbor, known as the Twin Cities of Lake county, is over. Indiana Harbor is to be merged with East Chicago. The decision to merge the cities was the result of the organization of a Chamber of Commerce, composed of business men of both places. The carrying out of the last plank in a working program, adopted at a meeting of the chamber, will mean the eventual elimination of the name "Indiana Harbor," as applied to the east end of the city, as a separate entity and the incorporation of the name East Chicago to cover the east side as well as the west side.

Bats Rid City of Mosquitos.

San Antonio, Tex.—There was mild amusement a year or so ago when Dr. C. A. Campbell announced his plans for a municipal bat roost as a solution of the malaria mosquito problem in this section. Despite the oddity of his suggestion, the plan was given a trial. A municipal roost capable of housing 250,000 bats was built and the bats were colonized. In a short time the mosquito plague was noticed to be declining, and with the continued operation of the bat roost the number of mosquitos in the city is appreciably less. San Antonio not only operates the bat roost, but by city ordinance has prohibited the slaughter of bats, and has, through its legislators, introduced a bill in the state legislature for state-wide bat protection. Dr.



Courtesy, Pueblo (Colo.) Star-Journal.
PUEBLO'S MUNICIPAL GARAGE AND MACHINE SHOP.

Campbell spent 14 years bringing his bat roost to perfection and devising methods of attracting the bats to the roosts after their completion. The experimental roosts were erected near Mitchell lake, in the worst malarial sections of the state. Each bat eats on an average 250 mosquitoes each night, and one roost will protect from seven to ten square miles.

Improvements for Ottawa.

Ottawa, Ontario.—The city of Ottawa will offer for sale early in September debentures to the amount of \$2,741,515 to raise funds with which to prosecute public works and to purchase equipment. It is stated that these debentures will bear 5 per cent. interest and run from 10 to 30 years. This will be the largest block of debentures ever offered for sale by the city. The public works and equipment to be provided for include waterworks, parks, sewers, sidewalks, a bridge, a municipal abattoir, pumps, and fire apparatus.

Richest Village Nearly Bankrupt.

Hibbing, Minn.—Hibbing, "richest village in the world," with \$750,000 in taxes levied and payable into the village treasury, has confessed bankruptcy and appealed to Governor W. S. Hammond to come to its aid with all the machinery of the state. It is a war between eleven mining companies which have refused to pay village taxes, and the village administration, headed by Mayor Victor L. Power. Governor Hammond is asked to call a special session of the legislature to enable the village to prosecute the delinquent mining corporations criminally and bring the matter quickly to a head, or send the state militia to Hibbing to replace the police and fire department forces which must be laid off for lack of funds to pay them. The city is to be left in darkness and without a water supply if the programme is carried out, and the mining companies themselves will be left without water or light, but dismissal of all city employees is deferred, Mayor Power said in Hibbing, pending a response to the request for a special session of the legislature. The village is powerless now to force payment of the taxes due from the mining companies. The taxes are delinquent, but there is no way to bring legal action until next May, when the authorities may order sale of the property on which taxes are unpaid. Even after the sale the companies would have five years to redeem their property. The mining properties on which taxes are being withheld are valued by the state at about \$80,000,000. The village levied 20 mills for village purposes, which would realize \$1,693,933.

Court Decides on Assessment Methods.

Traer, Ia.—Judge James W. Willets in the district court at Toledo has rendered a decision in the Traer paving cases in which he upheld the action of the Traer city council in the method of apportioning the assessments. Twenty-seven property owners perfected appeals from the order of assessment, but the cases were consolidated by agreement. The objections filed by the appellants were that in some cases the assessment exceeded 25 per cent of the actual value of the property assessed; that the cost of intersections should not be charged to abutting property; that the so-called "overhead expenses," or engineering charges, should not and could not be assessed, and that the assessment was inequitable and in excess of the special benefits conferred by the proposed improvement; that the council should have assessed lots containing valuable buildings higher than vacant or less improved tracts. As to intersection charges the town claimed in the trial of the case that they were legally assessable to the property in full, but that to lighten the burden to individual property owners the city had assumed 30 per cent of this expense. The assessments were computed under the new state paving assessment law and the costs of the proposed improvement were distributed to all lots within 300 feet of the streets to be paved. In his decision Judge Willets held that the assessment was substantially equitable and correct, but that \$350 of the attorney's fees incurred by the city during the construction of the improvements could not be charged to lot owners, and he reduced the assessment in the sum mentioned, amounting to \$1.20 per lot. The costs of the suit were thrown upon the city.

LEGAL NEWS

A Summary and Notes of Recent Decisions— Rulings of Interest to Municipalities

Ordinances—Violations—Prosecutions.

City of Birmingham v. Brown.—An action of debt for recovery of the penalty fixed for violation of a municipal ordinance may be brought by the city after expiration of the time within which a criminal prosecution must be instituted.—Court of Appeals of Alabama, 69 S. R., 263.

Street Improvements—Damages from Overflow.

Beard v. Kansas City.—Where a city improves a street and causes water from heavy rainfall to overflow adjacent premises, the owner of the premises may maintain an action for damages caused by the overflow, but such an action must be brought within two years after such overflow, or it will be barred by subdivision 3 of section 17 of the Code of Civil Procedure (Gen. St. 1909, Section 5610).—Supreme Court of Kansas City, 150 P. R., 540.

Ordinances—Violations—Indictment.

Canton Co. v. Slate.—An indictment alleging that a lot was in a state of nuisance and in such condition that in warm or unhealthy seasons a nuisance might thereby be created and the health of the citizens endangered, that the commissioner of health of the city caused notice to be served on accused, then and there the owner of the lot, directing the removal of the nuisance within a specified time and that accused refused to comply with the notice, and referring to the lot as commonly known as a street, lane, or alley, and that accused was the occupier thereof, states an offense under a city ordinance, empowering the commissioner of health to notify the owner or occupier of lots to abate a nuisance.—Court of Appeals of Maryland, 95 A. R., 58.

Ordinance—Power of Council.

Buckley v. Town of Guttenberg et al.—The councilmen of a town, authorized by 4 Comp. St. 1910, p. 5415, Section 1, subd. 27, to pass, amend, and repeal ordinances to establish, regulate and control the police, and to regulate the manner of their appointment and removal may, in their discretion, reorganize the police, in the interest of public service, either by amendment of the ordinances establishing the force or by repealing them, notwithstanding Tenure of Office Act (P. L. 1907, p. 50), regulating the tenure and terms of officers in police departments of towns, and legislation, whether by amendment or repeal, is not in contravention of the act, unless it is enacted for partisan purposes to get rid of the present police officers, to replace them by others of the same political faith as of the majority of the councilmen, or for some other motive subversive of civil service, but the board, acting in good faith, may abolish the present police department of the town.—Supreme Court of New Jersey, 95 A. R., 120.

Defect in Street—Icy Sidewalk—Notice—Liability.

Ryan v. City of Schenectady.—Second Class Cities Law (Consol. Laws, c. 53) § 244 requires that one injured by a defect in street or sidewalk present to the municipality a verified claim in writing, containing a statement of the claimant's residence, and describing certain specified particulars of the accident, and also that the claim be presented to the common council and served upon the mayor or city clerk, and that notice of intention to commence an action be served upon the corporation counsel. One injured by slipping on an icy sidewalk bordering land owned by defendant municipality filed with the city clerk and the corporation counsel merely notice in writing of his intention to commence action. Held, that he had no cause of action; services of a proper verified statement being a condition precedent to its maintenance. The liability of a municipality for injuries caused to pedestrians by the accumulation of ice on a sidewalk bordering land which it owns is the same as that of any private lot owner.—Supreme Court, Trial Term, Schenectady County, 154 N. Y. S., 890.

NEWS OF THE SOCIETIES

Calendar of Meetings.

- September 16-25.
INTERNATIONAL ENGINEERING CONGRESS.—Am. Soc. C. E., Am. Inst. Min. E., Am. Soc. Mech. E., Am. Inst. E. E. and Soc. N. A. & M. E., San Francisco, Cal. Secretary, W. A. Catell, Foxcroft Building, San Francisco, Cal.
- September 20-23.
ILLUMINATING ENGINEERING SOCIETY.—Ninth annual convention, New Willard Hotel, Washington, D. C. Secretary C. A. Littlefield, 29 West 39th Street New York.
- Sept. 22-24.
MASSACHUSETTS STATE FIREMEN'S ASSOCIATION.—Annual convention, Haverhill, Mass. George Wilson, Lynn, Mass., Chairman of Committee.
- September 23-24.
JACKSON HIGHWAY ASSOCIATION.—Convention, Nashville, Tenn.
- September 27-30.
SAFETY CONFERENCE. San Francisco.
- Sept. 27-Oct. 1.
PACIFIC COAST FIRE CHIEFS' ASSOCIATION.—Annual Convention, San Francisco. Secretary, Harry W. Bringham, Fire Marshal, Seattle, Wash.
- September 27-October 1.
INTERNATIONAL GAS CONGRESS AND AMERICAN GAS INSTITUTE. Convention, San Francisco. Secretary, George C. Ramsdell, 29 West 39th St., New York City.
- Sept. 29-Oct. 1.
MASSACHUSETTS STATE FIREMEN'S ASSOCIATION.—Thirty-sixth Annual Convention, Haverhill. Secretary, D. Arthur Burt, Taunton.
- October 4-6.
NORTHWESTERN GOOD ROADS CONGRESS.—Annual Convention, Cedar Rapids, Ia. Secretary-treasurer, J. P. Kennan, Milwaukee, Wis.
- October 4-9.
AMERICAN ELECTRIC RAILWAY ASSOCIATION. Convention, San Francisco. Secretary, E. B. Burritt, 8 West 40th St., New York City.
- Oct. 5-8.
PENNSYLVANIA STATE FIREMEN'S ASSOCIATION.—Annual Convention, Philadelphia. President, Miles S. Humphreys, Pittsburgh, Pa.
- October 6-8.
NATIONAL HOUSING ASSOCIATION.—Minneapolis, Minn. Secretary, Lawrence Veller, 105 East 22d street, New York City.
- Oct. 11-15.
NATIONAL PAVING BRICK MANUFACTURERS' ASSOCIATION.—Annual Convention, Dayton, O. Secretary, Will P. Blair, B. of L. E. Bldg., Cleveland, O.
- October 12-15.
AMERICAN SOCIETY OF MUNICIPAL IMPROVEMENTS.—Annual Convention, Dayton, O. Secretary, Charles Carroll Brown, 702 Wulsin Bldg., Indianapolis, Ind.
- November 9-12.
ATLANTIC DEEPER WATERWAYS ASSOCIATION.—Eighth Annual Convention, Savannah, Ga.
- November 17-19.
NATIONAL MUNICIPAL LEAGUE.—Annual Convention, Dayton, O. Secretary, Clinton Rogers Woodruff, 705 North American Bldg., Philadelphia, Pa.
- Dec. 27-Jan. 8, 1916.
SECOND PAN-AMERICAN SCIENTIFIC CONGRESS.—Washington, D. C., Department of State, Washington.
- February 15-18, 1916.
SECOND NATIONAL CONFERENCE ON CONCRETE ROAD BUILDING.—Secretary, J. P. Beck, 208 S. LaSalle St., Chicago, Ill.

New England Water Works Association.

The thirty-fourth annual convention of this association was held in New York City at the Waldorf-Astoria Hotel, September 7, 8 and 9. The first session was called to order about 10:30 on Tuesday morning and was opened by an address of welcome by Arthur H. Woods, commissioner of police, in behalf of Mayor Mitchel, who was unable to be present. This was followed by

addresses by Charles N. Chadwick, commissioner of the Board of Water Supply of New York, and Delos F. Wilcox, deputy commissioner of the Department of Water Supply, Gas and Electricity in that city. President Metcalf then introduced Nicholas Hill, president of the American Water Works Association, who briefly expressed his hope that the New England and the American Water Works Associations might unite upon some system of combining efforts and influence. The president of the New England Association, Leonard Metcalf, then responded to the addresses of welcome and delivered a brief address to the society.

Following these addresses, the secretary announced that there were 29 applications for membership, which were acted upon favorably by the convention, following which he stated that the total membership of the society now had reached a total of 965, the largest which it had ever had. (Other members were admitted during the convention, which brought the total to 978.)

J. Waldo Smith, chief engineer of the New York Board of Water Supply, then gave a brief description, with illustrations, of the Catskill water supply for that city, following which George G. Honness discussed the methods employed in maintaining a sanitary condition among the workmen on the watershed and caring for the sewage from the inhabitants thereon, in a paper entitled "Sanitation of a Large Watershed."

The afternoon was devoted exclusively to the reading and discussion of papers. H. A. Symonds, consulting engineer with the Hanscom Construction Company of Boston, read a paper entitled "Leadite Joints for Water Pipes," and was followed by W. C. Hawley, chief engineer and superintendent of the Pennsylvania Water Company of Wilkesburg, Pa., with a paper on the same subject, these two gentlemen having been requested by the officials of the society to give the members the benefit of their experience with this material. Mr. Symonds advanced several arguments for its use, the chief of these being its cheapness, this being secured by the low cost of the material itself on a cubic foot basis, the elimination of the expense of labor of calkers and other lesser savings. He stated that they had found certain conditions under which it was difficult to secure good work with the material, one of these being where straight pipes were laid on curves, or other conditions which gave a very thin jointing material at some part of the joint. They found that the men had to obtain some experience with handling the material and use care to secure good results; and there had undoubtedly been some cases where difficulties experienced before the men had

become accustomed to handling the material had discouraged contractors and superintendents against using it. Mr. Hawley stated that his company, after using the material for two or three years, had entirely abandoned the use of lead, except for certain occasional conditions. They now have 25 to 35 miles of pipe laid with leadite. He knew of cities or contractors which had not had good success with the material, but believed that this was due to unskillful manipulation and also frequently to the fact that calkers, who would not wish to lose their jobs on lead joints, had succeeded in bringing about failures of the tests of leadite. Mr. Hawley gave some carefully explained instructions for handling the material, these being, in general, that it should be heated until it begins to get thick, being stirred continually after it is once melted. The kettle should then be removed from the fire or the fire from the kettle and the material allowed to cool somewhat, when it would become of a consistency of thin, black oil. It must be stirred continuously all this time. When in the condition described, it is just right for use. When poured into the joint, the asbestos or clay ring should be given a gate at the top at least 4 inches high in order to secure a good joint at the top of the pipe. As with lead, there would occasionally be a joint which had an imperfect spot in it. These could be cut out by chisel, making a dovetail-shaped hole through the joint, and this could then be filled by re-running with leadite or by calking in lead wool. The cost of the material for a given joint was about 40 per cent that of lead, in addition to which there was the elimination of cost of calking and of the necessity of digging the bell-hole, the possibility of finishing the joint and backfilling more quickly, with all the advantages which this gave in bad trenches. Where the space required for calking was difficult to obtain, as against rock, wall or building, there was a similar advantage. Owing to the lightness of the material, as compared with lead, one man can handle sufficient material for a large joint which would require two or more trips if lead were used. The material is a very good non-conductor of electricity. It appears to be composed of sulphur and some mineral-like pulverized quartz. Should it catch fire in the kettle, the fire can be put out either by throwing on cold material or, if this fails, by pouring on water. There is no danger in the latter, owing to the low melting of the sulphur. He mentioned one instance in which three men made 95 joints of 8-inch pipe with leadite in eight hours.

In the discussion, J. M. Diven expressed his opinion that the material was brittle, and this gave it several disadvantages over lead. He and a number of other members also spoke of the great difficulty of obtaining the proper temperature in melting the material. Several, on the other hand, had been very successful in making tight joints with it, and had noted that even

joints that leaked a little when first made almost invariably "took up" within twenty-four hours.

Following this discussion, M. Blatt, assistant engineer of the Department of Water Supply, Gas and Electricity of New York, read a paper entitled "Laying Water Pipe in Congested Streets in New York City," in which he described some of the difficulties experienced owing to the multiplicity of underground structures of various kinds, it being necessary in some instances to relay more miles of old structures than of the new pipe. The experiences described related largely to the work of laying the high service fire protection system in New York. Lantern slides were used to show some of the more complicated conditions met with.

"Location of Leaks in Submarine Pipe Lines" was the title of a paper by E. G. Hooper, assistant engineer of the Department of Water Supply, Gas and Electricity of New York, read by F. B. Nelson, assistant engineer in that department. Mr. Hooper described a method developed by the engineers of the repair division for locating leaks under water, the method having first been used in locating a leak in a line about a quarter of a mile long leading from the mainland to one of the islands in the East river. The method, in general, was to find the coefficient of friction of the line in question, then close the valve at one end and determine the slope representing loss of head at the other end, and the pressures at both ends. By plotting the loss of head curve from the open valve toward the leak and the pressure at that valve, and carrying a horizontal line from the pressure at the other valve toward the leak, the point of intersection of these two lines would be over the location of the leak. In the instance referred to, the leak under the East river was located within 30 feet. A further test to check up this was made by fastening an aquaphone to the end of an oar which was held as far down in the water as possible, the user of the aquaphone being rowed back and forth of the vicinity of the leak. The sound of the escaping water could be detected readily when near the leak, but became inaudible at about 100 feet therefrom. A diver sent down at the point indicated by the theoretical calculation had no difficulty in finding the leak.

A paper entitled "Tests of Leakage from Lead Joints" was read by Arthur H. Smith, engineer of the Associated Factory Mutual Fire Insurance Companies of Boston. An abstract of this paper will be published by Municipal Journal. In the discussion, it was brought out that Boston tests all its river crossings two or three times a year to insure that there are no large leaks in them, and several superintendents spoke of the possibility of undiscovered leaks in stream crossings and the importance of finding them whenever they occur. At the conclusion of the discussion, Mr. Sullivan moved

that the president appoint a committee of five to collect the experiences of the members of the association and other water-works men as to leaks in pipe lines, which motion was carried. Later, the president appointed as this committee Frank A. Barbour, Carleton E. Davis, Samuel E. Killam, Caleb M. Saville, Henry B. Machen and A. H. Smith.

The evening session was opened by a description by Harry W. Clark, chemist of the Massachusetts State Department of Health, of the results obtained by double sand filtration in South Norwalk, Conn., a plant which has been in operation for several years. This plant was installed to remedy an extreme case of bad taste, odor and color caused by algae growths in the reservoir. Several kinds of algae occurred at different times of the year, the numbers of them being so great sometimes that the material resembled pea soup, more than 11,000 anabaena having been found in a cubic centimeter. Under ordinary conditions, the primary filter and aeration were found to give satisfactory results, but when the quantities were as great as just described, it was necessary to pass the water through the second filter. In the discussion by Messrs. Hazen, Hatch, Diven and others, reference was made to similar experiences with other plants. One instance was mentioned in which so large an amount of algae growth had to be removed that the amount of wash water used rose to 25 per cent; but by the use of copper sulphate in the reservoir this was reduced to 3 per cent. Erie, Pa., when experiencing the same trouble, found it necessary at one time to wash its filters every two hours, using wash water equaling 8 per cent of the amount filtered. Other members cited cases of the successful use of copper sulphate for reducing the algae and relieving the work of the filters.

Following this paper was one by Francis F. Longley of the firm of Hazen, Whipple & Fuller, entitled "The Salem and Beverly Water Supply," in which he described work being done at the present time by those two towns in increasing their supply by filling the reservoir at certain seasons of the year from a river about two or three miles away. One of the unusual features of this work was that the water was carried for about two miles in canal across swampy land, at the further end of which it was pumped the remaining distance to the reservoir through pressure mains.

Wednesday, September 8.—The morning session opened promptly with a short business session, in which ten more members were admitted by the association; a motion was passed that a committee be appointed to report at the next meeting on plans for a memorial for Dexter Brackett; and a recommendation by the executive committee that the society add three to its list of honorary members, these being Edwin C. Brook of Melrose, Mass., George A. Stacy of Marlboro, Mass.,

and Robert J. Thomas of Lowell, Mass. Two papers were then read presenting the relative advantages of the solid wedge and the double disc types of valve, the former by George H. Finneran, assistant superintendent of water service of Boston, and the latter by John M. Diven, superintendent of water works of Troy, N. Y. In order that the relative advantages might be thoroughly discussed on the floor, it was voted that the manufacturers of valves be given the privilege of the floor for discussing these papers. Mr. Finneran stated that solid wedge valves had been used in Boston for 67 years, that they had no fault to find with them and saw no reason for making a change. The city makes its valves and hydrants in its own shops. In his mind the great advantage of this form of valve was its mechanical simplicity, it being almost axiomatic that in any contrivance, and especially one handled as roughly as most valves were, simplicity was of greatest importance. As to the advantage claimed that the double disc valve gave a firm and complete seating of the gate on each seat, he was of the opinion that, as the pressure on one side of the valve was always greater than on the other, only one seat was used at a time in any valve. As a disadvantage of the double disc, he referred to vibration of the upstream disc which has been noticed when such valves were being opened or closed. In connection with the idea that only one seat was used or needed at a time, he stated that San Francisco is using solid valves which have parallel faces and seats, the gate fitting loosely between the two seats until water pressure is brought to force it against the downstream one.

Mr. Diven believed that the double disc type of valve gave less trouble in operation, that what wear there was upon the wedges in the valve, which were easy to replace, whereas with the solid valve the wear came on the faces of the gate and valve seat, which were very difficult and expensive to replace. He also believed that there was less wear on these faces in the case of the double disc type. Following this there was a discussion by Messrs. Fuller, Doane, Kimball, Gregory, Thomas, Tannatt, Gear and others. Most of these had had experience with only one type, mostly the double disc. Mr. Thomas, however, has both in his system and finds he has to replace more solid valves than double-disc valves. Certain of the former on blow-offs which have not been opened for twenty years or more are found so tightly wedged and corroded in place that it is impossible to open them. In Easthampton, Mass., solid valves are being substituted for double disc valves, because it is found that they can be more easily freed from dirt collecting in the bottom of the valve. Patrick Gear was emphatic in his statement that both kinds of valves gave trouble, much or all of which could be avoided if the manufacturers would make the stems heavier at the point where they usually

break, the threaded part of the stem, and would use brass or bronze for both pieces of the stuffing box, and would give a much wider clearance between the edge of the gate when closed and the outside casing of the valve, so that there would not be trouble in seating the valve when a little dirt had settled in the space between the valve seats. Although the manufacturers were repeatedly invited to speak on the subject, the only remark which could be drawn from them was a reply to this statement by Mr. Gear, one of the manufacturers saying that if they could manufacture valves for the water works superintendent and not for the purchasing agent they might be able to adopt Mr. Gear's suggestion; but that in most cities the price of the valve was the deciding argument in making purchases, and that it would cost considerable money to increase the amount of brass and bronze used in a valve. In connection with the discussion, several members referred to the frequent testing of valves, both to see that they were in condition and to prevent parts from corroding together which resulted from long years without any movement of the parts. Some superintendents complained that it would be impracticable, on account of the expense, to open and close all valves two or three times a year, but a representative from Philadelphia stated that in that city a party of three men attended to 16,000 valves in three months, opening and closing them and generally seeing that they were in good working order. The first time that they made the rounds of the valves, six months were required, on account of the difficulty experienced with moving a considerable proportion of them; but after having been over them once or twice, there was very little trouble found with any of them and no difficulty was experienced in covering the entire 16,000 valves four times a year.

The next paper was one by F. B. Nelson, assistant engineer of the Department of Water Supply, Gas and Electricity of New York, discussing the idea of testing meters with a view to ascertaining the curves of friction loss of the meters under different velocities and heads. In too many instances the author believed that meters were tested merely with reference to their accuracy at some standard rate of flow and no data were obtained as to their delicacy nor as to their capacity. In order to furnish meters at a low price, several manufacturers make them, for example, with a 2-inch connection and call it a 2-inch meter, when really the capacity is suitable for only an inch and a half connection or even smaller. Instances were cited where parties had complained about low pressure on their premises, when it was discovered that the meter they were using was of altogether insufficient capacity and was cutting down the pressure much more than it should. In Mr. Nelson's opinion, the loss of head in meters should be measured, as by the use of a mercury column, under velocities and quantities ranging from practically zero to the maximum capacity of the meter.

ties ranging from practically zero to the maximum capacity of the meter.

A paper entitled "Electrically Operated Valve Installation and Their Control from a Distance," by Alfred Williamson, mechanical engineer of the Department of Water Supply, Gas & Electricity of New York, described valves on the high pressure service of Manhattan, New York, by which this service was divided into three districts, which could either be operated as one or be entirely cut off the one from the other and each operated by its own pumping station; the large valves provided for effecting this division into districts being operated electrically from the stations.

A paper not given in the printed programme was read by Ralph M. Wheeler, department engineer of the Board of Water Supply, in which he described in detail the method employed by the board in manufacturing and setting concrete posts used for supporting the wire fencing with which the Catskill aqueduct right of way was enclosed. The posts were cast horizontally in metal molds; were reinforced with wire which was well rusted before use, acid being used to start the rust if necessary and were removed from the molds after thirty-six hours and cured at least two weeks before setting. The paper described the use of straining posts, gate posts, method of making and wiring on the fencing, etc.

Wednesday evening session was opened with a paper postponed from the morning session entitled "Pump Slip Tests as an Aid to Efficiency in the Operation of Pumping Engines" by H. D. Havill. This was followed by a description of the Kensico reservoir by Wilson Fitch Smith, division engineer of the Board of Water Supply, the description being illustrated by a considerable number of lantern slides. Ralph H. Stearns then read a paper entitled "Decolorization of Water by Storage," in which he advanced some arguments based upon New England experiences for the belief that this decolorization was not due entirely to bleaching by the sun but also to oxidation, and that in some instances the bleaching effect was from 70 per cent. to 50 per cent. as great in the bottom of a deep reservoir as at the top. In a written discussion, Robert Spurr Weston stated that coagulation of colloidal coloring matter, which was effected by agitation and by other physical phenomena, was accountable for a considerable part of the decolorization, this matter settling as ooze on the bottom of reservoirs. Allen Hazen did not believe that it was ordinarily worth while to make any special efforts towards clarification or decolorization of water in the reservoir itself, since it was now considered essential for a pure surface water supply that it be filtered, and this filtration would make inexpedient any expense for securing the minor effects referred to. Dr. D. D. Jackson questioned whether the figures used by the author for the color of water entering the reservoir were sufficiently representative of all the water entering to be of any value in the comparisons which he made.

tative of all the water entering to be of any value in the comparisons which he made.

The costs and results obtained, and to a certain extent the methods employed, in reforestation methods on the Croton watershed were described by T. C. Culyer, assistant engineer of the Department of Water Supply. He stated that young trees were obtained by the department from the Conservation Commission for 50 cents per thousand, and that two men would plant 500 of these in a day; that greater speed in planting was possible, but not if sufficient care were given to secure a fairly low rate of mortality. The last paper of the evening was one entitled "Infiltration Galleries as a Source of Water Supply on Long Island," in which W. F. Laase, assistant engineer of the Department of Water Supply, described this method of obtaining water for Brooklyn.

The Thursday morning session was the last session of the convention and was opened promptly with the admission of three more to the list of members. Russell Suter, assistant civil engineer of the New York State Conservation Commission, then read a paper describing the control which this commission exercised over the water supplies of the state. The Conservation Commission had in several cases given permits for municipalities to construct water works plants when the municipality was already served, but inadequately, by a private plant, explaining that this seemed defensible in these cases because there was no authority vested in any state commission to regulate either the character of the supply or the rates charged for the same and that the only remedy for inadequate or unsatisfactory supply or high rates appeared to be a municipal plant. In discussing this, Mr. Diven stated that, while the total amount of control which the state exercised over water supplies was perhaps not even as great as it should be, it was distributed among four different bodies, to all of which water works superintendents were required to report. Mr. Knowles stated that true conservation of water would bear in mind the fact that water is useful not only for water supply but also for the dilution of sewage, for the creation of power and for other uses, and that no one should be permitted to monopolize a stream at the expense of the other uses.

The improvements recently made and being made to the Fall River, Mass., water supply were described at length by Harold K. Barrows, with lantern slide illustrations. The most interesting of these were connected with the efforts of the city to prevent the pollution of the lake from which the supply was obtained by building a sewer along its banks which would intercept all surface drainage as well as house sewage, a considerable portion of this sewer being in open cut as more certainly preventing any surface flow from reaching the lake.

In addition to the committee on pipe

leakage already named, the president appointed, as a committee for nominating officers, F. A. McInnes, E. W. Kent, J. Waldo Smith, E. E. Lochridge, and A. E. Blackmer. Also as committee to report on memorial to Dexter Brackett, Frederic P. Stearns, Alfred D. Flinn and Allen Hazen.

During the convention the ladies were entertained with rides around the city, a card party, theatre party, etc. Members and guests were given a trip down to the Narrows and up the Hudson on Wednesday afternoon, and one to the Kensico Dam of the Catskill water supply on Thursday afternoon.

The registration at the convention, including guests, was 577.

In rooms adjoining the convention hall was held an exhibition of appliances, which will be described in our next issue.

International Association of Fire Engineers.

The forty-third annual convention of the International Association of Fire Engineers was held at Cincinnati, O., August 31 to September 3. After a contest between Minneapolis and Providence, R. I., for the honor of the next convention, the latter city was selected. Officers were elected during the last business session.

The new officers of the association are: President, Harry L. Marston, Brockton, Mass.; first vice-president, Thomas A. Clancy, Milwaukee, Wis.; second vice-president, A. A. Rozetta, Nashville, Tenn.; secretary, James McFall, Roanoke, Va., and treasurer, Geo. Knofflock, Mansfield, O. The state vice-presidents were also elected. Retiring President Hugo R. Delfs, of Lansing, Mich., was elected delegate to the Insurance Congress to be held at San Francisco in October.

The convention was formally opened Tuesday morning by President Hugo R. Delfs. Archbishop Henry Moeller delivered the invocation, and he was followed by Mayor Frederick S. Spiegel, who delivered the address of welcome, Safety Director John R. Holmes and President T. C. Powell of the Cincinnati Chamber of Commerce. Chief John Kenlon of the New York fire department responded for the visiting delegates.

Automatic sprinklers occupied most of the afternoon session. The topic, "Would the Compulsory Sprinkling of All Business Buildings and Blocks in the Congested Districts of a City Eliminate a Possible Conflagration?" was thoroughly discussed by a dozen chiefs. It was opened by Chief W. H. Murphy of Philadelphia. He upheld the sprinklers as one of the greatest devices ever invented, but, like all of the chiefs, held that they will not prevent a conflagration.

One of the best talks given on this subject was by Chief John Kenlon. He asked the convention the question, "Could you disband your fire department if the city was equipped with sprinklers?" He cited many recent fires in New York where sprinklers, al-

though working properly, failed to prevent a serious fire.

They act as both policemen and firemen, he declared. First, they discover the fire and turn in the alarm, and then fight it until the fire department arrives. Sprinklers have their limitations, he declared. They can only combat with a blaze until the firemen arrive, but in most cases will not extinguish it.

Another feature that Chief Kenlon brought out was that wire glass is not fireproof. A laboratory test made by him in Chicago recently with the chief of that city showed that high-polished glass withstood the same amount of heat pressure before melting.

Herman L. Ekerm, former insurance commissioner of Wisconsin, was also a speaker in favor of sprinklers as the best method of fire prevention. He favored equipping every building in the congested district with sprinklers. He advised the chiefs to take up this important question with their legislative bodies. This, he said, is a big task, but the best method to obtain such an ordinance is to educate people before you have it passed and then educate them after it has become a law to make it effective. If the people are taught, he said, that fire losses and insurance premiums will be lower, then a chief will experience no trouble in his fire prevention campaign.

Chief C. W. Ringer of Minneapolis, a member of the board of directors, was the only visitor to take advantage of the question box established by Chief Bunker. He asked the convention to open a discussion on "Would Automatic Sprinklers Filled with Carbonic Gas Give the Property Owner the Same Insurance Rate and Is It Just as Effective in Fighting Fires?"

Chief Kenlon of New York said his experience with carbonic acid gas was not very satisfactory. It has a tendency to overcome the men, he says, and unless laboratory tests are made he would not advise its adoption.

Chief John F. Healy of Denver says that the gas has a tendency to clog in small tanks and he believes that if it is allowed to remain in a small sprinkler pipe any length of time it would clog and prevent it from having its full pressure when released.

Chief J. C. McDonnell of the bureau of fire prevention for public safety of Chicago spoke against the sprinklers as a fire preventer, but in favor of them as a life saver. In Chicago, he says, the sprinklers are installed under pressure from a city ordinance for this one purpose—to protect lives. It was never intended, he says, to prevent conflagration. Like many others, he spoke against the dry piping system. He said by the time a company arrives and attaches its hose to the system the pipes are so hot that the water when it reaches the seat of the blaze is nothing but vapor and does no good.

Chiefs William H. Bywater of Salt Lake City, Utah, and J. Henderson of St. Louis also discussed the sprinklers.

Following the discussion of the

sprinklers, Chief Stanton of Norwich offered a resolution, which was adopted by the convention, stating that the association was in favor of the sprinklers. It also called upon the president to appoint committees to investigate the different makes of sprinklers and the best method of installing them and report to the association.

At the session next day the chiefs heard an address by Franklin H. Wentworth, secretary of the National Fire Protection Association. He proposed a resolution to the convention which is a step in preventing fires.

The resolution as adopted by the fire chiefs is in favor of state or municipal legislation designed to assess upon individuals, firms or corporations the cost of extinguishing fires whenever it is shown that such blazes are caused by the failure to comply with any ordinance or law enacted for the prevention of fires. The resolution also indorses the campaign of the National Fire Protection Association for this object.

Mr. Wentworth gave an interesting talk on the work of his association and its history. Its chief purpose, he declared, is to prevent fires and loss of lives. It has adopted a set of standards for all fire departments, which are rapidly being used in many cities. Standards in building construction and equipment is another big thing being undertaken by his association.

Former Chief Sherwood Brockwell of Raleigh, N. C., offered a resolution favoring the appointment of a competent fire engineer by each state for the purpose of instructing firemen in fighting fire. The resolution was adopted.

Chief Thomas A. Clancy of Milwaukee, second vice-president of the association, delivered an address at the afternoon session on "The Proper Restrictions for the Storage and Handling of Nitric Acid, One of the Fire Fighter's Worst Foes."

Laboratory fire fighting was the topic of an illustrated address by J. E. Latta of Chicago of the National Board of Fire Underwriters' Association. A two-reel picture showed the methods the fire underwriters use in obtaining the best material for fire prevention and recommend it to the builders of new structures.

John C. McDonnell, chief of the bureau of fire prevention and public safety of Chicago, told of his personal experience in this line of work. He explained the workings of his department in Chicago and of what has been accomplished.

At the next morning session, the committee on fire prevention, appointed a year ago by President Hugo R. Delfs, headed by John Kenlon of New York City, as chairman, filed its first report. Chairman Kenlon read the entire report, showing how to organize a fire prevention bureau, and the way the committee believes it should be conducted.

One of the features of the report was a paragraph referring to the records of all fires being kept by the actu-

arial bureau operated under the direction of the National Board of Fire Underwriters. This is furnished all companies on request. One of the other things undertaken by the board to disrupt is the insuring of property in two companies for its full amount. This, they declare, will put out of commission a good many of the firebugs. This bureau, while in operation only seven months, has discovered five cases where property was insured in two separate companies.

The report also stated, in regard to the extent of fire losses in America compared with Europe, that one of the contributing causes is the density of population in many cities and the concentration of values in small areas.

The element of carelessness is causing from 100 per cent to 300 per cent more fires, the report said. In the future, the report stated, the fire departments will be divided into two groups—fire fighters and fire preventers. The work of the fire preventers for the next 100 years to come will not make the service of the fire fighters less necessary. Practically every American city is a fire bed and will remain so until the structural conditions are changed. Until this change has been made, the committee contends, cities will have to maintain powerful fire departments.

The committee recommends that fire prevention bureaus be organized in every city of the country to be directed by the chief of the fire department. The chief of the fire prevention bureau should have supervision over several functions, such as inspections, regular and special; building construction and auxiliary fire appliance; occupancies, investigations of fire and education of the people in general.

In the larger cities it is recommended that a sub-chief have charge of each function. Each man should be an expert in his own line, and, where possible, men from the uniform rank should be placed as inspectors and made to attend regular school sessions. It also is recommended that the boards of education be induced to incorporate fire prevention in the instruction work of the school children.

The committee on fire prevention consists of John Kenlon, chairman, New York City; George W. Booth, William H. Murphy, Peter F. McDonough, Thaddeus O. Doane and George A. Wallace.

Chief Henry C. Bunker delivered an address before the convention on uniform testing of theatrical scenery during the morning session. Cincinnati is a pioneer city in this work.

N. V. Holmes, fire marshal of the Sears-Roebuck Company, Chicago, gave an interesting talk on fire department organization in industrial plants. He was followed by Philip S. Tilden, fire chief of the fire department of Harrison Bros. & Co. of Philadelphia, who likewise explained their method of combating fires.

James Smart, chief of Calgary, Alberta, Canada, delivered a technical address on traction and non-skid devices for motor-driven apparatus.

Chief Stanton of Norwich talked on the adoption of standards in the fire departments of the country. He advised this as one means of doing away with a lot of trouble now experienced in buying hose.

The following firms were represented by exhibits as described:

Star Electric Co., Newark, N. J. Represented by J. W. Mackay, F. F. Stover, O. S. Doolittle of Chicago, Timothy O'Hearn of Boston and E. D. Fay of Newark, N. J. Showing 12-circuit storage battery repeater and line controlling switchboard; 24-wheel capacity signal transmitter; Seth Thomas Umbria style master clock; combination 9-inch gong and visual indicator; seven boxes; registers; time stamps; tappers; take-up reels; 60-inch two-shelf metal battery rack, etc.

G. A. Anderson & Co., of Baltimore, Md. Represented by G. A. Anderson and J. E. Peck. Showing the Anderson nozzle, hydrant caps, couplings, hose menders, cellar pipes, etc.

Gamewell Fire Alarm Telegraph Company, Newton Upper Falls, Mass. Represented by C. F. Maulen, O. R. Crocker and L. K. Lambert of Chicago. Showing fire and police alarm apparatus, also the latest type Peerless highly insulated box, switchboards, registers, etc.

Rensselaer Valve Co., Troy, N. Y. Represented by M. H. Collins, assistant general sales manager, Chicago. Showing Corey fire hydrants and Rensselaer valves.

American-LaFrance Fire Engine Co., Elmira, N. Y. Represented by J. R. Clarke, president and general manager; E. C. Keating, sales manager, and Fred Fischer, assistant sales manager. Showing the following apparatus: Type 31, 75-foot aerial truck; Type 40, combination wagon and chemical; Type 40, combination wagon and chemical, equipped with junior pump; two Type 12 triple combination pumping engines; one Type 10 triple combination pumping engine; one Type B Brockway combination wagon and chemical; also parts exhibit, showing portions of motor, drive, apparatus, etc., before being assembled.

South Bend Motor Car Co., South Bend, Ind. Represented by A. O. Mechlenberg, South Bend, Ind. Showing 6-cylinder motor combination wagon and chemical; also motor and parts display.

Ahrens-Fox Fire Engine Co., Cincinnati. Represented by Chas. H. Fox, president, and John P. Ahrens, vice-president, Cincinnati. Showing the following apparatus: Model L-2 pumper and hose wagon, with 6-cylinder engine and 6-cylinder pump; Model MK-2 pumper and hose wagon; Model K-2 pumping engine and hose wagon; Model K-11 combination hose wagon and booster pump; Model A-C triple combination pumping engine, hose wagon and chemical.

James Boyd & Bro., Philadelphia. Represented by F. H. Stafford of Philadelphia. Showing 75-foot motor-driven aerial truck; also tractor for steam fire engine.

Robinson Fire Apparatus Co., of St. Louis, Mo. Represented by E. T. and V. N. Robinson. Showing the following apparatus: Monarch pumping engine and hose wagon; Jumbo pumping engine and hose wagon; one 45-foot motor city service ladder truck.

Knox Motor Associates, Springfield, Mass. Represented by C. F. Rouze, Springfield, Mass. Showing 4-wheel detachable tractor attached to 5-ton steam fire engine.

The Lungmotor Co., Chicago. Represented by E. H. Lyon, Chicago. Showing the Lungmotor, for life-saving purposes.

Edison Storage Battery Co., Orange, N. J. Represented by H. L. Davison, Orange. Showing one-million-candle-power portable searchlight, head-lamps for firemen's and miners' helmets, to be carried on belt.

Sewell Cushion Wheel Co., Detroit, Mich. Represented by H. J. Sewell and A. J. Sewell of Detroit and E. H. Milliken of Boston, Mass. Showing Sewell Cushion Wheels for motor fire apparatus.

Chicago Fire Hose Co., Chicago, Ill. Represented by Robt. Manny, Chicago. Showing Chicago Fire Hose.

Bi-Lateral Fire Hose Co., Chicago. Represented by M. E. Baird and R. M. Lawless, Chicago. Showing Bi-Lateral Hose.

The Pyrene Co., New York. Represented by T. F. Flanagan, N. Y. Showing Pyrene fire extinguisher. An automatic sign at this exhibit, showing the results of a fire before and after using Pyrene, attracted much attention.

National Water Main Cleaning Co., New York. Showing device for cleaning water mains.

Dayton Rubber Mfg. Co., Dayton, O. Represented by C. R. Lawrence, Dayton. Showing the Dayton Airless Tire for motor fire apparatus.

The Samuel Eastman Co., Concord, N. H. Represented by C. E. Robinson. Showing Eastman holders, nozzles, Deluge sets and other fire stream specialties.

Weed Chain & Tire Grip Co., Bridgeport, Conn. Represented by W. F. Walker, Bridgeport. Showing Weed non-skid devices for automobile tires.

Vajen Helmet Co., Richmond, Ind. Showing smoke helmets for firemen.

G. C. Reiter Co., Canton, O. Represented by G. C. Reiter of Canton and R. E. White, Alliance, O. Showing fire and traffic signal gongs, electric motor gongs for fire apparatus, etc.

Peter Pirsch Co., Kenosha, Wis. Represented by W. R. Pirsch. Showing trussed ladders, hose shut-offs, door openers, etc.

Seagrave Fire Apparatus Co., Columbus, O. Represented by H. B. Spain, Wm. E. Lee, Columbus, and representatives from different branch offices. Showing the following apparatus: One 500-gallon combination pumping engine and hose wagon; one 750-gallon combination pumping engine and hose wagon; one 1,000-gallon combination pumping engine and hose wagon; one salvage corps squad car, and one exhibit chassis, showing interior working

of pump, operated by electricity for demonstration purposes.

Davis Sewing Machine Co., Dayton, O. Represented by R. K. Larsch, Walter Harland and F. H. Ankeney, Dayton. Showing the Dayton Tri-Car Chemical.

Kellogg Switchboard & Supply Co., Chicago. Represented by E. A. Woodward, Chicago. Showing chief operator's equipment, combining fire alarm and service telephone.

Municipal Journal, New York. Represented by S. W. Hume, New York.

American Society of Municipal Improvements.

The twenty-second annual convention of the American Society of Municipal Improvements will be held at Dayton, O., October 12-15, inclusive. William A. Howell, of Newark, N. J., is president and Charles C. Brown, Indianapolis, Ind., secretary of the society. Following is the program of the convention:

The Committee on Standard Specifications will meet with the various sub-committees and those interested as follows: Wood Block at 11 a. m.; Brick Paving at 11:30 a. m.; Bituminous Paving at 12 m.; Asphalt Paving at 12:30 p. m.; Concrete Paving at 2 p. m.; Stone Block Paving at 2:30 p. m.; Broken Stone and Gravel Roads at 3 p. m., and Sewers at 3:30 p. m.

Tuesday, October 12.

9 A. M.—Registration; payment of dues; issue of credentials, and information; meeting of executive committee.

10 A. M.—Addresses of welcome by George W. Shroyer, mayor of Dayton; Henry M. Waite, city manager, and Fred W. Rike, president of the Greater Dayton Association. Response by Morris R. Sherrerd, past-president, chief engineer of the board of public works, Newark, N. J.

11 A. M.—Business session, as provided by the constitution; president's address by William A. Howell; secretary's report by Charles C. Brown; treasurer's report by W. B. Howe; report of the executive committee; report of the finance committee; reports of special committees, obituary committee, membership committee, committee on sidewalks, by Wm. D. Willigerod, East Orange, N. J.; selection of nominating committee and committee on resolutions.

2 P. M.—Report of committee on garbage disposal and street cleaning, John T. Fetherston, chairman, New York City; "The Operation and Efficiency of the High Temperature Destructor Plant at Savannah, Ga.," by E. R. Conant, chief engineer, Savannah, Ga.; "Garbage Disposal in Dayton," by J. E. Barlow, director of public service, Dayton, O.; "Public Welfare Through Legislation," by Dr. D. Frank Garland, director of public welfare, Dayton, O.; paper by Charles H. Rust, city engineer, Victoria, B. C.; report of committee on water works and water supply, C. F. Davis, chairman, bureau of water, Philadelphia, Pa.; "Some Notes on Waterworks Re-

construction," by A. F. Macallum, city engineer, Hamilton, Ont.; "Municipal Inspection Methods in the Borough of Manhattan," by Dr. Felix Kleeberg, chemist, Borough of Manhattan, New York City; "Paving Maintenance from the Standpoint of Its Relation to the Economical Features," by Robert A. Meeker, state engineer of the department of public roads, Trenton, N. J.

Tuesday evening there will be a banquet to the association, tendered by the National Paving Brick Manufacturers' Association, Charles J. Deckman, president; Will P. Blair, secretary.

Wednesday, October 13.

9 A. M.—"Flood Prevention" (illustrated), by E. A. Deeds, chairman board of directors of the Miami Conservancy District, Dayton, O.; "Recut Granite as Laid in the City of Baltimore," by R. M. Cooksey, principal assistant engineer, paving commission, Baltimore, Md.; "Joint Fillers for Granite Block Pavements," by C. D. Pollock, consulting engineer, New York City; "Asphalt Repairs for Small Municipalities," by W. H. Taylor, Jr., city engineer, Norfolk, Va.; "The Types of Bituminous Construction and Their Limitations," by Francis P. Smith, New York City; "Cement Concrete Construction for Suburban Localities," by J. B. McCalla, Knoxville, Tenn.; "Cement Concrete Highway Pavement," by A. M. Reynolds, chief engineer, Essex county park commission, Newark, N. J.

Wednesday afternoon there will be an automobile trip about Dayton.

8 P. M.—Report of committee on street paving, Frederick A. Reimer, chairman, county engineer, Newark, N. J.; "Wood Block Pavements with Special Reference to Economic and Efficient Wood Preservatives," by J. W. Howard, consulting engineer on roads and pavements, New York City; "The Proper Oil for Treating Wood Block for Paving," by P. C. Reilly, Indianapolis, Ind.; "Wood Block Specifications," by Hermann von Schrenk, consulting engineer, St. Louis, Mo.; "Creosoted Wood Block Pavements," by E. R. Dutton, assistant engineer, Minneapolis, Minn.; "Brick Paving" (illustrated), by Will P. Blair, secretary National Paving Brick Manufacturers' Association, Cleveland, O.; "Vertical Fibre Brick Pavements," by A. D. Duck, city engineer, Greenville, Tex.; "Vitrified Block Construction of Streets and Roads," by Wm. C. Perkins, chief engineer inspection department of Dunn Wire-Cut-Lug Brick Co., Conneaut, O.

Thursday, October 14.

9 A. M.—Report of committee on sewerage and sanitation, George H. Norton, chairman, Buffalo, N. Y.; "The Pioneer Plant for Treating Sewage by Activated Sludge Process," by T. Chalkley Hatton, sewer commissioner, Milwaukee, Wis.; "Re-aeration as a Factor in Self-Purification of Streams," by Prof. Earl B. Phelps, U. S. Public Health Service; "Stream Pollution from Surface Drainage as the Limiting Fac-

tor in Sewage Purification," by George H. Norton, Buffalo, N. Y.

2 P. M.—Report of committee on standard forms, A. Prescott Folwell, chairman, New York City, and of the sub-committee on street cleaning and refuse disposal, J. T. Fetherston, chairman, New York City; street lighting, G. A. Sawin, Newark, N. J.; sidewalks and curbs, Harry F. Harris, Newark, N. J.; sewer construction and maintenance, E. S. Rankin, Newark, N. J. Report of committee on standard specifications, George W. Tillson, chairman, consulting engineer to the borough president, Brooklyn, N. Y., and of the sub-committees on wood block paving, Ellis R. Dutton, chairman, Minneapolis, Minn.; brick paving, Edward H. Christ, chairman, Grand Rapids, Mich.; bituminous paving, Linn White, chairman, Chicago, Ill.; asphalt paving, Francis P. Smith, chairman, New York City; concrete paving, William J. Hardee, chairman, New Orleans, La.; stone block paving, H. H. Schmidt, chairman, Brooklyn, N. Y.; broken stone and gravel roads, A. H. Blanchard, chairman, New York City; sewers, E. J. Fort, chairman, Brooklyn, N. Y.

8 P. M.—Report of committee on municipal legislation and finance, Arthur R. Denman, chairman, Newark, N. J.; "The Dayton Plan of Government," by Henry M. Waite, city manager, Dayton, O.; "Citizen Co-operation in Municipal Affairs," by Fred H. Rike, president of the Greater Dayton Association, Dayton, O.; "The Work of the Federated Improvement Associations in Dayton," by William S. Crandall, Dayton, O.; "The City at Work," by Louis L. Tribus, consulting engineer, New York City; "Obligations of the State to the Municipality in Matters of Public Works," by Alexander Potter, consulting engineer, New York City.

Friday, October 15.

9 A. M.—Report of committee on traffic on streets, L. L. Tribus, chairman, New York City, E. P. Goodrich and C. D. Pollock; "The Traffic Census and Its Bearing on the Selection of Pavements," by W. W. Crosby, consulting engineer, Baltimore, Md.; report of committee on street lighting, James C. Hallock, chairman, Newark, N. J.; report of committee on park development and maintenance, George A. Parker, chairman, Hartford, Conn.; report of committee on fire prevention, Alcide Chausse, chairman, Montreal, Que.

A budget exhibit of the city of Dayton, the public schools and Montgomery county will be in progress during the week of the convention at Memorial Hall, corner of First and St. Clair streets, beginning October 9 and closing October 18.

Louisiana League of Municipalities.

At a meeting held at Alexandria, La., August 23-25, a permanent organization of the Louisiana League of Municipalities was effected and the following officers elected: Mayor H. B. Knott, Ruston, president; Mayor Martin

Behrman, New Orleans, vice-president; Mayor J. B. Elam, Mansfield, secretary; Mayor J. W. Lehman, Donaldsonville, treasurer. An auditing committee consisting of Mayors W. W. Whittington, of Alexandria, John Gamble, of Jennings, and S. A. Dickson, of Shreveport, was named and these, with the officers of the association, form the executive committee.

The association endorsed the proposition that the constitutional convention, which meets in September, 1915, authorize the issue of \$5,000,000 low-interest-bearing bonds, the proceeds of which shall be used for the construction of three main state highways.

League of Washington Municipalities.

Public utility problems—especially municipal ownership, public health administration, public water supplies, municipal milk supplies and the city manager system for smaller cities—will occupy a large part of the time of the delegates to the sixth annual conference of the League of Washington Municipalities, to be held in North Yakima, October 6 to 8. Announcement of the program has just been made by the bureau of municipal research at the University of Washington, which is the headquarters for the league.

Special convention rates have been granted by all railways to persons traveling from points in Washington, Oregon and Idaho.

The announcement of the bureau says, relative to the discussion of municipal ownership:

"It is a very important and a very live issue in this state at the present time. Both sides of the question will be well represented by thoroughly competent men, and all who attend and participate in these discussions cannot fail to go home convinced that these annual conferences are worth while."

Among the papers to be presented are: "Public Service Corporations and Municipal Home Rule," by H. M. Stephens, Spokane; "The Inefficiency of Municipal Ownership," by W. J. Grambs, of the Puget Sound Traction, Light & Power Co., Seattle; "The Value of Full-Time Health Officers," by Dr. Thomas D. Tuttle, state health officer, Seattle; "Public Water Supplies," by Dr. Thomas Tetreau, health officer, North Yakima; "Improving Municipal Milk Supplies," by Dr. J. S. McBride, commissioner of health, Seattle; "Some Problems of Municipal Water Supply," by Mayor C. M. Fassett, Spokane; "Valuation of Public Service Properties," by Ralph S. Pierce, assistant corporation counsel, Seattle; "The Referendum on Bills Passed by Our Last Legislature," by O. T. Erickson, councilman, Seattle; "The Efficiency of Municipal Ownership," by J. D. Ross, superintendent city lighting department, Seattle; "Public Ownership and Operation of Rail and Water Terminal Facilities Produces the Greatest Despatch and Economy," by Commis-

sioner Robert Bridges, port of Seattle commission.

The conference will conclude with a pheasant dinner, Friday evening, October 8, when the following speakers will be heard: President Henry Suzzallo, University of Washington, who will speak on "The University and Public Service"; Stephen J. Chadwick, of the state supreme court, whose subject will be "Municipal Problems and the Courts," and C. A. Reynolds, chairman of the state public service commission, who will discuss "Nation Against State; State Against City."

Illinois Municipal League.

The second annual convention of the Illinois Municipal League, formerly the Illinois Mayors' Association, will be held at the University of Illinois, Urbana-Champaign, about the middle of October. There will be an interesting educational program devoted to the practical problems of municipal government, with addresses by experts in the state university and by municipal and state officials. An important feature will be a question box, at which problems submitted in advance will be answered by competent persons. The meeting will be a short course at the university for the city officials throughout the state.

Heretofore it has been customary for the meetings of the league to be held in different cities, but the opportunities presented by the state university, with its equipment, were so well demonstrated in 1914, that if the city officials throughout the state evince enough interest in it, it is intended that these meetings shall hereafter be held regularly at the University of Illinois.

City officials with questions and problems to be solved are requested to forward them at once to the secretary, Prof. John A. Fairlie of the University of Illinois at Urbana, so that there may be ample time in which to prepare answers which will be given during the convention.

Mayor W. W. Bennett of Rockford is president; Mayor G. J. Johnson of Paxton, vice-president, and Prof. John A. Fairlie of the University of Illinois, Urbana, is secretary and treasurer.

Indiana Electric Light Association.

The seventh annual convention of the Indiana Electric Light Association was held at Terre Haute, September 8 to 10. The convention was opened by President T. F. Grover, and the morning program included official and committee reports. During the afternoon, papers on technical subjects were read by Halford Erickson, of the Wisconsin Railroad Commission; Frederick Nicholas, associate editor of the Electrical World, and Emmet Ralston, an employee of the Indianapolis Light & Heat Co., whose topic was "Methods of Determining Maximum Demands for Rate Making Purposes," and R. A. Brackett, of the Westinghouse Company.

Other speakers were D. L. Gaskill, secretary of the Ohio Electric Light

Association; Judge J. L. Clark, of the Indiana Public Service Commission; Preston S. Millar, of the Electrical Testing Laboratories; Fred L. Dennis, of the Indiana & Michigan Electrical Co.; E. J. Condon, of the Indiana Utilities Company, and R. E. Russell, of the General Electric Co.

Officers were elected at the closing session as follows: President, E. J. Condon, Angola; vice-president, S. W. Greenland, Fort Wayne; secretary-treasurer, Thomas Donahue, Lafayette; executive committee: T. F. Grover, Terre Haute, chairman; T. F. English, Muncie; A. R. Holliday, Indianapolis; F. A. Bryan, South Bend, and C. C. Perry, Indianapolis. Mr. Donahue had been secretary and the duties of treasurer were added to his work. Fort Wayne and Kokomo were applicants for the next meeting. The selection was left to the executive committee.

After adjournment, the delegates were taken in automobiles to visit two electrically equipped coal mines—one near Liggett and the other at West Clinton.

New York State Volunteer Firemen's Association.

At the annual convention held at Oneida August 17-18, John Sells of Yonkers was elected president of the association. The other officers elected were: First vice-president, John R. Mahaney, Lockport; second vice-president, Archer B. Wallace, Freeport, L. I.; secretary, Thomas Honohan, Frankfort; treasurer, John Powers, Ossining; trustees of the firemen's home, Fred H. Wilson, Jamestown, and James L. Murphy, Ithaca; members of executive committee, Elias E. Mann and Fred Emerson.

South Carolina Association of Mayors.

A meeting will be held at Columbia October 25 at which time a state association of mayors will be formed. Mayor Griffith of Columbia is one of the leaders in the movement.

League of Wisconsin Municipalities.

The seventeenth annual convention of the League of Wisconsin Municipalities was held at Green Bay August 24-25. Oshkosh was selected as the place of the next meeting and the following officers were elected: Mayor, F. J. Wolff, Fond du Lac, president; vice-president, C. B. Clark, mayor of Neenah; secretary-treasurer, Ford H. Macgregor, Madison; members executive committee, O. J. Sorensen, La Crosse; Joseph Fisher, Marinette; P. E. Bolens, Port Washington; J. C. Schubert, Madison; A. J. Horlick, Racine, and Burt Williams, Ashland.

Speakers agreed that a garbage disposal plant or incinerator is absolutely necessary in any city having over 10,000 population, and without such a plant, the health of citizens is liable to be impaired.

Among the speakers were Secretary Ford H. Macgregor of the association; City Engineer P. H. Connolly, Racine;

(Continued on page 452.)

NEW APPLIANCES

Describing New Machinery, Apparatus, Materials and Methods and Recent Interesting Installations.

THE "WONDER" PAVER.

Single Bearing, Tilting Drum Mixer With Traction and Paver Features.

The "Wonder" paver combines the "Wonder" mixer with traction and paver parts and is designed for use on both large and small paving jobs and for many kinds of concrete work not strictly paving. The elimination of a large number of parts in the ordinary non-tilting drum type makes it compact. By removal of the distributor the paver is converted quickly into a regular "Wonder Ten" mixer. The 8 h.p. engine gives sufficient power for charging, mixing and moving ahead at the same time.

The drum is the regular "Wonder Ten" type, revolving on ball bearings. It has but one journal, and this is lubricated by dust-proof force feed grease cup under the drum. The drum is supported on a trunnion and is tilted by power for charging and discharging. Water is supplied on either side by means of the automatic water measuring tank. The drum takes a 10 cubic feet batch of unmixed material and records show that the machine delivers from 10 to 15 cubic yards per hour, or about 90 to 135 sq. yds. 4 inch per hour, 80 to 125 sq. yds. 5 inch, 60 to 90 sq. yds. 6 inch and 50 to 80 sq. yds. 7 inch. The loading skip has the same capacity and is of the open end drum type and wide neck, quick acting and non-choking. It is heavily reinforced and travels on guide rails to discharge into drum. It can be locked in any elevated position for moving the machine about. The hoisting drum is actuated by a patent helix cone clutch and is fitted with non-bearing brake band.

The power discharge mechanism is

reversible as stated, and the operator can discharge either the entire batch or any part of it at will. The clutch operating the discharge is of the cone type and the mechanism is self-locking. The operator reaches all control levers, both mixing and traction, without leaving his seat. The distributing chute is 12 feet long and can be made to discharge at 12, 9 and 6 feet. It swings through an arc of 180 degrees, has ample pitch and can be raised or lowered easily to suit requirements.

The traction speed is 1½ miles per hour forward and 1 mile an hour reverse. The machine will climb a 20 per cent grade with fair footing. The 8 h.p. vertical gasoline engine is equipped with high tension magneto and requires no batteries or coils. It is fully protected by substantial steel housing. The engine is mounted over the rear axle to reduce vibration and is easily accessible.

Three-point suspension is obtained by connecting the axle to the main frame in such a manner as to allow free vertical play on either end. The front wheels are attached to the axle by steel steering knuckles which permit turning in a thirty-foot street. The machine is guided by a handwheel connected to an irreversible worm so that no road shocks are transmitted to the operator. The differential, of the standard automobile type, is located on a jack-shaft between the driving gears and is attached thereto.

The frame is of 6 inch channels, strongly braced and riveted. The weight is 7,500 pounds. Dimensions are 8 feet 11 inches high and 8 feet long (without distributor). The light weight allows working the machine over

"green" concrete base, not possible with a heavier outfit.

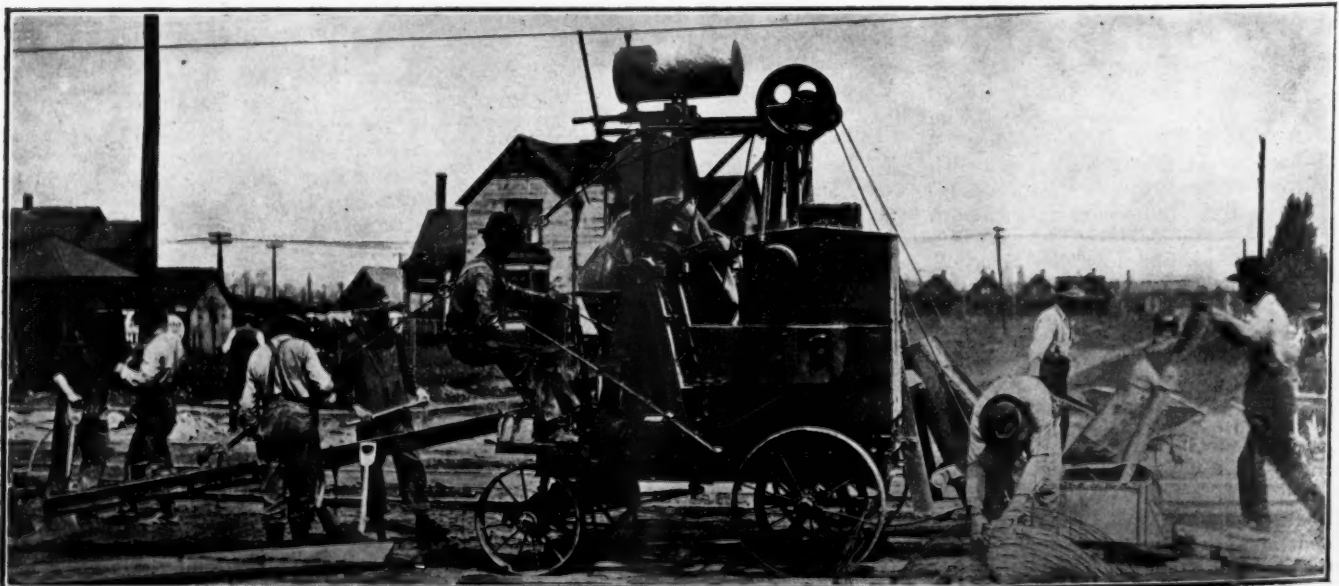
The illustration shows the "Wonder" on the job for John Diffor, contractor, Superior, Wis. Among others who have this paver in service are Charles Bessler, Winfield, Kans., D. M. Briggs Co., Boston, Mass., and Stephen Schulte, Fort Madison, Ia. The paver is made by the Waterloo Cement Machinery Corporation, Waterloo, Ia.

SEWER FORM.

Telescopic Type for Monolithic Construction.

A new Blaw form for concrete sewer construction is designed with some very novel and useful features. The form is telescopic, collapsing into itself, section by section, the parts as they are finished with being run through the standing section further along the work. The result is a monolithic concrete sewer, without any joints. The telescopic system of collapsing and setting up make the work rapid and simple.

The form is made in four quadrants, the invert, or bottom, sections being built with angles which form a track on which the small steel or wood carriage runs. After the forms have been erected, they are collapsed by removing bolts at the base through the angles and the wedge-shaped wood filler piece (shown in the lower right hand side of the illustration). The four segments are placed on top of each other on the small carriage which runs on the invert of the forms. The carriage is pushed through the forms which are in position where concreting is in progress. A turnbuckle is used to line up the forms when they are being



"WONDER" PAVER AT WORK.

concreted. The forms are set up in the invert either on small pedestals or on the concrete dish placed previously. There are no joints in the structure, either longitudinal or vertical.

On a job in San Antonio, Tex., on which the Bailey-Reeder Co. are contractors, 175 feet of these Blaw forms were collapsed, moved forward and reset in seven hours—and while concreting was going on in the balance of the forms. This type of form is in use on four other San Antonio contracts and in many other parts of the country and is meeting with success.

The illustration shows sections piled on the carriage passing through a standing form. The forms are the product of the Blaw Steel Construction Co., Pittsburgh, Pa.

PORTABLE AIR COMPRESSOR.

With Motor, Air Tank, etc., for Contractors' Service.

The wide use of compressed air for all kinds of construction work, such as ripping and tamping in road work, riveting sewer and water pipes, etc., makes the portable air compressor a valuable all-round machine for the contractor. The hand portable set of Gardner-Rix air compressor, directly geared to an electric motor, and mounted with an air tank and accessories, is particularly designed for this purpose.

The Gardner-Rix is a high-speed vertical compressor of simple and economical type which has wide use in various kinds of service. There are few parts and no intricate mechanism to require constant skilled attention. The light construction makes it particularly adapted to portable units. Its high speed allows the use of high-speed motors on combination units. Because of the high speed, also, it is claimed that the capacity is greater than that of any other machine of equal size cylinder. The unit is compact.

Some of the special features are the enclosed crank-case, keeping out dust and dirt, and the automatic splash lubrication which eliminates the necessity

of grease cup, oil cup or oil hole. There are no stuffing boxes or cross-heads. The light sheet steel valves and indestructible seating, without wear on the cylinders, insure noiseless operation. The valves are of large size.

For larger work the stationary types and combinations may be used. The capacities vary from 6 to 140 cubic feet and pressures from 40 to 250 pounds.

The illustration shows the portable set. The compressors are made by the Gardner Governor Co., Quincy, Ill.

INDUSTRIAL NEWS

Cast Iron Pipe.—Chicago—With the exception of 500 tons of pipe, bids on which will be received by Macon, Mo., September 14, there is no new business in sight. General pipe business is quiet. Quotations: Water pipe, 4-inch, \$26.50; 6-inch and larger, \$24.50; Class A pipe, \$1 extra. Birmingham—While prices have been about stationary, an advance is expected soon. Considerable tonnage is in sight. Quotations: 4-inch, \$21.50; 6-inch and larger, \$19.50; gas pipe, \$1 extra. New York—Public lettings have fallen off in volume but private sales hold their own. Another advance in the price has recently been made. Quotations: 6-inch, Class B, \$24 and \$24.50; Class A and gas pipe, \$1 extra.

Lead.—Recent activity has subsided, but prices are firm and will probably remain so for some time. Quotations: New York, \$4.90; St. Louis, \$4.75.

The Dunn Wire-Cut-Lug Brick Company, Conneaut, O., announces that R. T. Stull, E. M. Cer., has become associated with it as its ceramic engineer. His special duty will be to advise with the licensees of the Dunn Company, and help them with their brick making problems. Mr. Stull is widely known as author of numerous contributions to ceramic literature as well as in practical and educational fields. He is a graduate of the department of ceramic engineering at Ohio State University

in 1902, and for five years was connected with various important ceramic industries as superintendent. He became an instructor in ceramics in the

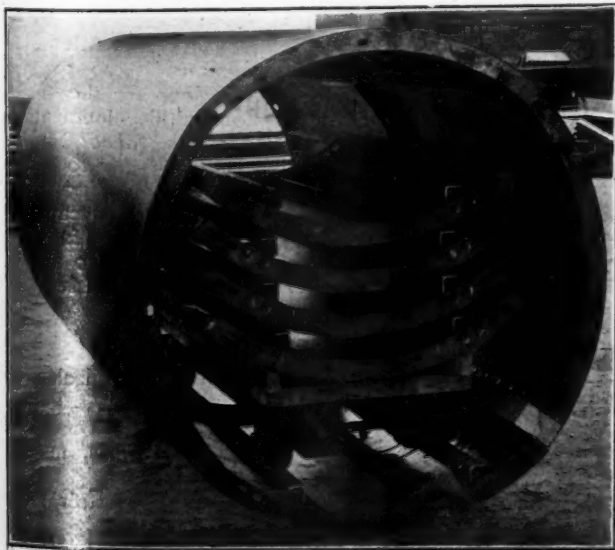
University of Illinois, in 1907, and has been connected with that institution continuously since that time. In August, 1913, he was advanced to the position of acting director, department of ceramic engineering. He is a member and vice president of the American Ceramic Society, a member of the American Chemical Society, American Society for Testing Materials, National Brick Manufacturers' Association, and the Illinois Clay Manufacturers' Association. The engaging of the services of Mr. Stull is an extension of the policy of the company as already developed in the maintenance of a corps of expert engineers who are supervising the constructional work.

The Allis-Chalmers Mfg. Co., Milwaukee, Wis., announces that it has established a sales agency at 1429 Munsey Building, Baltimore, Md. O. H. Bordner, formerly of Cincinnati, is manager.

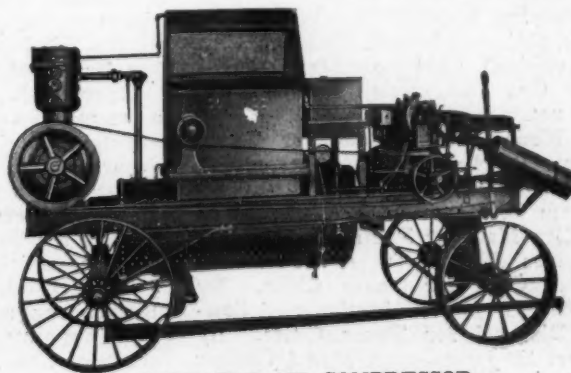
The Universal Portland Cement Co., 708 South La Salle street, Chicago, Ill., announces that J. H. Lendi, formerly assistant to A. G. Carlson, mechanical engineer of the company, has been given the title of electrical engineer in the engineering department of the company.

The Kissel Motor Car Co., Hartford, Wis., announces the opening of the following new agencies: Mansfield & Condron, Tucson, Ariz.; A. W. Van Houton, Davenport, Ia.; Hagerty, Sr., & Son, Port Deposit, Md.; Pacific Kissel Kar Br., Portland, Ore.; Richfield Motor Co., Richfield, Wis.; Utah Motor Co., Salt Lake City, Utah; Bruening Bros. Auto Co., Kansas City, Mo.; Wallbrecht & Fink, Middlesboro, Ky.; S. Vichos, Athens, Greece; C. C. Picon, Turin, Italy.

The Goodyear Tire & Rubber Co., Akron, O., according to C. W. Seiberling, vice-president, has for 1916 not only continued all manufacturers' contracts held previously, but has added such high grade cars as Packard, Hudson, Jeffery, Locomobile, Mitchell, Franklin, and others. It is claimed that Goodyear's not only equip a larger percentage of all new cars than any other tire, but also that more different manufacturers use them. The company



BLAW TELESCOPIC SEWER FORM.



PORTABLE AIR COMPRESSOR.

states that it is now using ten per cent of the world's production of crude rubber, which indicates the magnitude of its operations in the tire field. It is expected that the Goodyear automobile tire production for this year will be well over the two million mark.

The Austin-Western Road Machinery Co., Chicago, Ill., has just sold to the city of Joplin, Mo., a 7-ton gasoline tandem street roller and a gyratory rock crusher.

The Stewart Sewer Cleaner is being used by the city of Muscatine, Ia., to remove the deposits of button dust, tar and other materials which have almost choked up the sewers in some parts of the city. The cleaner is manufactured by W. H. Stewart, 1614 Locust street, St. Louis, Mo., and 297 Eustis street, Boston, Mass.

The Dayton Tri-Car Chemical exhibited at the Cincinnati convention was always a center of interest. The three-wheel apparatus was in much evidence at Chester Park and on the streets in the downtown districts. At Chester Park it divided popular interest with the big pumping engines.

The exhibit was in charge of S. H. Ankney, W. A. Harland and R. W. Larsh. The car was driven through the rain from Dayton, sixty miles distant, on the Monday preceding the opening of the convention and was looking fit and trim for a run of twice the distance, should it have been necessary. Particularly impressive is the especially strong construction of the chassis and the amount of power developed by the motor. The frame is of chrome nickel steel and the machine throughout has been especially designed for heavy duty work.

The exhibit of the Dayton Airless Tires, made by the Dayton Rubber Manufacturing Co., Dayton, O., was one of the popular stopping places for chiefs at the Cincinnati convention. Many of the machines exhibited at the convention from the lightest tri-car to the heaviest pumper were equipped with Dayton Airless Tires. The exhibit was in charge of C. R. Lawrence, assistant sales manager.

PUBLICATIONS RECEIVED

Surveying Manual. By William D. Pence, C.E., and Milo S. Ketchum, C.E. (4th edition). 384 pp. McGraw-Hill Book Co., Inc., New York. Price, \$2.00 net.

A Model Health Code for Texas Cities. By Robert M. Jameson. **A Student Survey of Austin, Tex.** By William B. Hamilton, B.A. **What Is the City Manager Plan?** By Herman G. James, J.D., Ph.D. **A Model Civil Service Code for Texas Cities.** By Herman G. James. **Methods of Sewage Disposal for Texas Cities.** By Robert M. Jameson. **A Model Charter for Texas Cities.** By Herman G. James.

Street Paving in Texas. By Edward T. Paxton. University of Texas, Austin, Tex.

NEWS OF THE SOCIETIES

(Continued from page 449.)

City Engineer C. U. Boley, Sheboygan, and Ald. S. J. Stouffacher, Monroe.

Mayor H. W. Adams, Beloit, spoke on open paving specifications, and Ald. Felix Biemera, Green Bay, on bridge construction.

Two committees were named by President Sorensen. Ald. Henry Smith, Milwaukee; Mayor Winford Abrams, Green Bay; Herman Schultz, Milwaukee; Martin Georgensen, Manitowoc, and Mayor Joseph Fisher, Marinette, are to investigate the bonding of cities. A. J. Horlick, Racine; Mayor Stolze, Manitowoc; Mayor Ringle, Wausau; Mayor Kayser, Madison, and Mayor Clark, Neenah, are on the nominating committee to name new officials for the association.

Pennsylvania Electric Association.

The annual convention of the Pennsylvania Electric Association was held at Bedford Springs, September 10. The following officers were elected: President, Stephen C. Pohe, Bloomsburg; vice-president, George B. Tripp, Harrisburg; secretary-treasurer, Henry N. Muller, Pittsburgh, re-elected, and executive committee: E. H. Davis, Williamsport; E. B. Greene, Altoona, and P. M. Hoecker, Renovo.

PERSONALS

Ambler, J. N., of Winston-Salem, N. C., has been appointed consulting engineer for the city of Concord, N. C.

Cain, James W., formerly superintendent of highways for Queens Borough, died August 27 at his home, Bay-side, L. I., aged 69.

Carman, James L., mayor of Grandview Heights, O., died at Battle Creek, Mich., August 25, aged 50.

Cooke, Forrest F., several times mayor of Galesburg, Ill., died August 25 on a train just as it reached Joliet. He was 67 years of age.

Dalrymple, William, has been appointed a member of the Terre Haute, Ind., board of public works, succeeding D. F. Scott.

Delaney, Timothy, for thirty years city tax assessor of Paterson, N. J., died at his home in that city September 4, aged 61.

Duerner, J. M., for forty-five years a member and for half that time assistant chief of the Erie, Pa., fire department, has been appointed chief, to succeed the late J. J. McMahon.

Fenn, Robert, has been elected president of the Sheboygan, Wis., board of water commissioners.

Maj. H. B. Ferguson, George H. Benzenberg and T. C. Hatton have been appointed engineers to make a study of water main extension in Milwaukee.

Hall, John A., has been elected city auditor of Boulder, Colorado.

Hayes, Thomas Gordon, former mayor of Baltimore and a well-known lawyer, died at Oakland, Md., August 27, aged 71, of heart disease.

Hennacy, B. F., mayor of Lisbon, O., has resigned. A. E. Christopher is serving as mayor.

Kemp, George, has been appointed highway superintendent of the town of Westerly, R. I.

Lacey, Philip, formerly city engineer of Bradentown, Fla., has been appointed district road engineer of De Soto county.

Langenfeld, James, has been elected chief and John S. Finken assistant chief of the Earling, Ia., fire department.

Merkle, George W., has been appointed statistician of the Division of Housing and Sanitation of Philadelphia, Pa.

Rights, W. H., of Columbus, has been appointed city engineer of Seymour, Ind., succeeding E. B. Douglass.

Robinson, B. H., has been appointed temporarily chief inspector of the City Lighting Inspection Department of St. Louis.

Sears, S. E. D., has been elected mayor and E. A. Weaver, Harry Christensen and F. A. Gordon, town councilmen, of Miami, Arizona.

Smith, Armor, Jr., former mayor of Cincinnati and surveyor of customs, died at Cincinnati August 23, aged 74, after an illness of two weeks.

Tunstall, Robert B., has been elected chairman, T. S. Southgate, vice-chairman, and H. H. Rumble, secretary, of the Norfolk, Va., charter commission.

Wray, John W., of Memphis, Tenn., has been appointed chief of the El Paso, Tex., fire department.

The following have been appointed members of the Iowa Good Roads Commission: D. W. Norris, Jr., Marshalltown; John W. Foster, Guthrie Center; E. T. Meridith, Des Moines; J. M. Brockway, Letts; James C. Davis, Letts; Charles E. Cameron, Alta; Edward S. Rose, Shenandoah.

Koester, Frank, consulting engineer and city planning expert, New York, has been retained by the Allentown city planning commission to prepare plans and specifications for the systematic and economical development of Allentown, Pa., a city of 62,000 inhabitants. These plans are to cover the entire field of city planning, from engineers', architects' and landscape designers' standpoint. During his work at Allentown, he will give also an exhibition and several illustrated lectures on city planning.

Following officers have been elected: Courtland, Va.—Junius W. Pulley, mayor.

Batesburg, S. C.—E. Jones, mayor; J. D. Galloway, alderman.

Carrabelle, Fla.—H. L. Mattair, mayor; J. R. Blocker, clerk.

Klamath Falls, Ore.—W. H. Mason, mayor.

ADVANCE CONTRACT NEWS

ADVANCED INFORMATION BIDS ASKED FOR

CONTRACTS AWARDED ITEMIZED PRICES

To be of value this matter must be printed in the number immediately following its receipt, which makes it impossible for us to verify it all. Our sources of information are believed to be reliable, but we cannot guarantee the correctness of all items. Parties in charge of proposed work are requested to send us information concerning it as early as possible; also correction of any errors discovered.

BIDS ASKED FOR

STATE	CITY	REC'D UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
STREETS AND ROADS				
Ill.	Canton	2 p.m., Sept. 18	5,500 sq. yds. concrete pavement, and 1,400 cu. yds. excavation	County Supt. of Hways.
Fla.	De Land	Sept. 18	Constructing cement sidewalks	G. T. Haynes, City Clk.
Kan.	Ellsworth	Sept. 18	Constructing eight miles of road	A. J. Klingenschmidt, Co. Clk.
Wis.	Antigo	10 a.m., Sept. 18	Constructing concrete sidewalk	City Clerk
Fla.	Jacksonville	3 p.m., Sept. 18	2,500,000 paving brick; 50,000 lin. ft. granite curb	J. B. McCrary Co., Engrs., Atlanta, Ga.
Ky.	Louisville	Sept. 19	Improving streets by paving with asphalt & vit. brick	Roger McGrath, Secy.
Wis.	Lake Geneva	4 p.m., Sept. 20	Const. vit. brick pavement on sand cushion	City Clerk
Cal.	Santa Barbara	Sept. 20	Paving road, estimated cost \$17,689	C. A. Hunt, Clk.
Tenn.	Knoxville	2 p.m., Sept. 20	Grading, draining and macadamizing road, cost \$90,000	W. D. Lyon, Bluff City.
Tenn.	Blountville	Sept. 20	Grading, draining and macadamizing	C. M. Dulaney, Engr.
N. J.	Newark	2 p.m., Sept. 20	Street improvements	C. A. Reimer, City Engr.
O.	Conneaut	Noon, Sept. 20	14,400 yds. asph. or brick pavement, 12,000 ft. conc. curb, and 2,550 ft. storm sewer	S. W. Mahaffey, Dir. P. S.
Minn.	Minneapolis	11 a.m., Sept. 20	10,000 yds. filling or grading	Al. P. Erickson, Co. Clk.
Fla.	Winter Park	Sept. 20	Paving with brick and concrete	Percy Dale, Clk.
O.	Leetonia	Noon, Sept. 20	2.05 miles grading, curbing and paving with brick	J. H. Carroll, Twp. Clk.
Ill.	Riverside	8 p.m., Sept. 20	13,000 yds. two-course conc. pavement. (Village to furnish cement, sand and gravel)	W. S. Burling, Pres. B. L. I.
N. D.	Bowman	1 p.m., Sept. 20	Grading county road	E. R. Fairbanks, Co. Aud.
Ill.	St. Charles	8.30 p.m., Sept. 20	Paving with vitrified brick	J. W. Wilson, Engineer
Minn.	St. Paul	10.30 a.m., Sept. 20	Paving and grading streets	Aug. Hohenstein, Pur. Agt.
N. J.	Newark	3 p.m., Sept. 20	Improving streets in Bloomfield	F. A. Reimer, Boro. Engr.
Cal.	Los Angeles	2 p.m., Sept. 20	12,835 yds. concrete pavement with bituminous surface; grading	H. J. Leland, Co. Clk.
O.	Leetonia	Noon, Sept. 21	11,777 yds. brick or cement paving, curbing and 15,600 yds. excavation	J. H. Carroll, Twp. Clk.
Ky.	Carlisle	Sept. 21	Reconstructing road	Nicholas County Court
La.	New Orleans	Sept. 21	Erecting asphalt plant	A. G. Ricks, Comr. Pub. Fin.
Tex.	Taylor	8 p.m., Sept. 21	120,000 yds. pavement (all classes)	A. G. Hyde, City Clk.
Md.	Denton	noon, Sept. 21	2.06 miles state aid highway with shell macadam or concrete	H. Waldorf, Rd. Engr.
Pa.	Philadelphia	Sept. 21	Grading and repaving several streets	M. L. Cook, Dir. P. W.
Ky.	Louisville	Sept. 22	Constructing two miles of road	Letcher Fiscal Court, Whitesburg
Ala.	Carrollton	Sept. 22	Grading, draining and surfacing with sand-clay or gravel	Co. Commissioners.
O.	Leetonia	Noon, Sept. 22	4,246 yds. paving (brick or cement), curbing and bridging; 6,557 yds. excavation	J. H. Carroll, Twp. Clk.
Ky.	Louisville	Sept. 22	Paving alleys with vit. brick	Board of Public Works
Pa.	Pittsburgh	10 a.m., Sept. 23	Improving road	H. M. Cribbs, Co. Cont.
Pa.	Erie	Sept. 23	Widening streets	City Engineer
Kan.	Wichita	Sept. 24	One-fourth mile paving with vertical fibre brick	Bert Wells, City Engr.
N. Y.	Newburgh	5 p.m., Sept. 24	Paving with reinforced concrete	W. J. Blake, Jr., City Engr.
Minn.	Walker	2 p.m., Sept. 25	Clearing and grading road; 24,000 yds. of surfacing	C. D. Bacon, Co. Aud.
Ala.	Scottsboro	Sept. 25	Grading and draining road; cost, \$11,158	W. S. Keller, State Hwy. Engr., Montgomery.
Tenn.	Dunlap	Noon, Sept. 25	Grading, macadamizing or graveling road	J. B. Johnson, Secy.
Va.	Eastville	Sept. 27	55 miles sand clay road	County Clerk.
Va.	Bland	Sept. 27	2.46 miles of road construction	R. C. Repass, Clk. of Supv.
N. D.	Bowbells	2 p.m., Sept. 27	Constructing several grades	G. K. Melby, Co. Aud.
Pa.	Lebanon	5 p.m., Sept. 27	2,000 yds. creosoted wood blk. & 225 yds. Amiesite	Dan Sharp, City Clk.
O.	Bexley	Noon, Sept. 27	Grad., curb. and paving with brick, conc., asph. or mac.	C. A. Miller, Clerk
Ky.	Princeton	Sept. 27	Two miles macadam road	Caldwell Fiscal Court
Md.	Baltimore	Noon, Sept. 28	1.21 miles state highway, concrete pavement	O. E. Weller, Chr. State Hwy. Comm.
Mo.	Kansas City	Sept. 28	Grading streets and constructing bridge	Park Commissioners.
Iowa	Guthrie Center	Sept. 30	30 blocks paving with sheet asphalt, asphaltic concrete, bitulithic, vitrified brick or concrete	S. B. Weeks, Town Clk.
Ind.	Plymouth	1.30 p.m., Oct. 1	Grading, draining and paving with gravel	G. F. McCoy, Co. Aud.
O.	Findlay	noon Oct. 2	Repairing county road	J. C. Copeland, Co. Clk.
Kan.	Wichita	Oct. 4	Eight miles sand and clay paving	E. V. Moore, Co. Engr.
Wis.	Green Bay	10 a.m., Oct. 4	Paving alleys	F. Blemert, Chr. St. Comm.
Ind.	Brazil	Oct. 5	Grading, draining and paving with gravel	W. O. Graesser, Co. Aud.
Ind.	Angola	1 p.m., Oct. 5	Improving highways	F. C. Dewey, Co. Aud.
Mo.	St. Louis	Noon, Oct. 5	Paving with brick and constructing granite curb	E. R. Kinsey, Pres. B. P. S.
Ind.	Muncie	10 a.m., Oct. 6	Improving gravel roads	F. M. Williams, Co. Aud.
Ind.	Franklin	2.30 p.m., Oct. 8	Grading, paving & improving roads, two jobs	H. L. Knox, Co. Aud.
N. J.	Newark	2.30 p.m., Oct. 11	Improving road	F. A. Reimer, Boro. Engr.
SEWERAGE				
Ia.	Sioux City	Sept. 18	15,500 ft. 8-in. pipe sewers and 43 manholes	T. H. Johnson, City Engr.
N. J.	Linden	8 p.m., Sept. 20	2,302 ft. 8-in. sewers	J. L. Bauer, Twp. Engr., Elizabeth.
Minn.	St. Paul	10.30 a.m., Sept. 20	Constructing Fredericka sewer system	Aug. Hohenstein, Pur. Agt.
Ia.	Ames	7 p.m., Sept. 20	Constructing sanitary sewers in several streets	A. B. Maxwell, City Clk.
N. Y.	New York	3 p.m., Sept. 20	Foundation work, sewers and water mains	Supt. of School Bldgs., Department of Education.
Pa.	Montgomery	8 p.m., Sept. 20	Constructing sewer	W. C. Waltman, Sec. Council.
Ill.	St. Charles	8.30 p.m., Sept. 20	Constructing sewers in several streets	J. W. Wilson, Engineer
Mich.	Bay City	9 a.m., Sept. 20	Constructing 18-in. socket tile sewer	E. E. Prohazka, Sec. D. P. W.
Conn.	Bridgeport	8 p.m., Sept. 20	Constructing sewers in several streets	Bernard Keatings, Sec. Pav. & Sewer Comm.

BIDS ASKED FOR

STATE	CITY	REC'D UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
Wis.	Racine	10 a.m., Sept. 20	Constructing drainage ditch	T. H. Knight, Co. Surv.
Ind.	Kokomo	Sept. 20	Constructing 10-in. vit. tile sewer	Ben Haven, City Clk.
Minn.	Brainerd	Sept. 20	Constructing lateral sewers	A. Mahlum, City Clerk.
O.	Port Clinton	Sept. 20	2,000 ft. 22-in. sewer	City Clerk.
S. D.	Centerville	Sept. 20	Sewer construction, cost \$25,500	City Clerk.
Ore.	Forest Grove	8 p.m., Sept. 21	Sanitary sewer and disposal plant, includes 65,000 ft. 8 to 16-in. pipe, etc.	M. R. Markham, City Rec.
Minn.	Chatfield	1.30 p.m., Sept. 21	3,800 ft. of sewer, septic and settling tanks and chlorine plant	John Chermak, City Rec.
Ia.	Meservey	6 p.m., Sept. 21	Constructing sewers and drains	P. E. Philpott, Twn. Clk.
Minn.	Slaton	2 p.m., Sept. 21	Constructing tile ditch, cost \$4,865.79	E. V. O'Brien, Co. Aud.
Ind.	South Bend	10 a.m., Sept. 21	Constructing pipe sewer	Veronica Sweeney, Clerk
Minn.	Morris	10 a.m., Sept. 21	Digging & const. tile ditch, cost \$6,802.51	C. R. Wollthan, Co. Aud.
Ia.	Lisbon	Sept. 22	Sewerage system and disposal plant	T. R. Warriner, Engr., 324 Dows Bldg., Cedar Rapids
Mich.	Ann Arbor	Sept. 22	17,500 ft. 8 to 12-in. sewers, 2,500 ft. 15 to 36-in. sewers and 1,300 ft. concrete culvert	Manley Osgood, City Engr.
Wis.	Appleton	Sept. 23	2,300 ft. 66 and 72-in. segment blk. or concrete sewer	A. C. Bemley, City Engr.
Mont.	Whitehall	Sept. 23	Sewerage system to include Imhoff disposal tank	G. E. Baker, Cons. Engr.
Minn.	Blue Earth	11 a.m., Sept. 24	Constructing county ditch	J. L. Herring, Co. Aud.
N. J.	Seaside Park	Sept. 24	Sanitary sewers and disposal plant	Remington & Fosburg, Engrs, 501 Market St, Camden
O.	Niles	Noon, Sept. 24	Constructing sanitary sewers	J. N. Cowdery, Dir. P. S.
O.	Toledo	Noon, Sept. 24	Constructing sanitary sewer	C. J. Sanzenbacher, Co. Aud.
Minn.	Walker	2 p.m., Sept. 25	Furnishing metal culverts	G. A. Ralph, Engr., 16 Fulton Bldg., St. Paul
N. J.	Verona	Sept. 25	Sewer system and disposal plant	Robt. Chesney, Vil. Clk.
Ia.	Sioux Falls	Sept. 27	Three miles sanitary sewers; cost, \$12,000	City Clerk.
Minn.	Lyle	8 p.m., Sept. 27	Constructing main and lateral sewers, includes 12,000 ft. 8 to 16-in.	G. A. Martin, Vil. Rec.
N. J.	Woodbridge	8.30 p.m., Sept. 27	Constructing 1,700 ft. 8-in. vit. pipe sewer	A. Keyes, Town Clk.
N. J.	Trenton	2.30 p.m., Sept. 29	Constructing sewers in several streets	Frank Thompson, City Clk.
Va.	Culpeper	Oct. 1	Sewer line construction	A. W. Pulliam
Minn.	Cokato	8 p.m., Oct. 5	Constructing sewers	N. E. Berg, City Clk.

WATER SUPPLY

Mont.	Fromberg	Sept. 18	Water works system to cost \$17,000	C. J. Jones, Vil. Clk.
Utah	Myton	Sept. 20	Constructing water works	R. B. Croix, Town Clerk
Ia.	Traer	8 p.m., Sept. 20	200,000-gal. conc. storage reservoir & wtr. main exten.	C. P. Chase, Engr., Clinton
S. D.	Gayville	2 p.m., Sept. 21	44,270 ft. 4 and 6-in. c. l. pipe, hydrants, tower and tank, engine house and deep well pump and fittings	E. A. Aaseth, Town Clk.
D. C.	Washington	10 a.m., Sept. 21	Cast iron pipe fittings, wrought iron pipe & valves for Navy yard	Bn. of Supplies & Accts. Water & Light Comrs.
N. J.	Jamestown	Sept. 23	Ten 11-in. driven wells	F. E. McCall, Town Clk.
Mont.	Whitehall	Sept. 23	Water works system, pump, hydrants, pipe, etc.	E. S. Elwood, Sec., Albany
N. Y.	Central Islip	Noon, Sept. 24	Artesian wells at State Hospital	F. C. Boggs, Purchasing Officer, Panama Canal
D. C.	Washington	10.30 a.m., Sept. 24	Wrought iron or steel and cast iron pipe	F. A. Flack, City Clk.
Ill.	Amboy	Sept. 27	Erecting steel tank	W. S. Watson, Water Comr.
Neb.	Hastings	Sept. 27	Sinking 24-in. well 130 ft.	Board of Water Supply.
N. Y.	New York	11 a.m., Sept. 28	Electrically operated valves for reservoir	Dept. of Public Works.
Pa.	Philadelphia	Sept. 30	Turbo-centrifugal pump, stoking equip. and bed plate	District Comrs.
D. C.	Washington	Sept. 30	350 low-pressure fire hydrants	Board of Managers, Reformatory for Women.
N. J.	Clinton	1 p.m., Oct. 1	Extension of water distribution system	Board of Trustees
O.	Wilberforce	10 a.m., Oct. 1	Improving water supply system at University	J. H. Lane, Engr., 30 N. Franklin St., Wilkes-Barre.
Pa.	Tamaqua	Oct. 5	Constructing reservoir	Smith & Boulay, Nasby Bldg., Toledo.
O.	Belleville	Nov. 9	Deep well pump, has engine, 5 miles of main and storage reservoir	

LIGHTING AND POWER

Okla.	Adamson	Sept. 20	Electric light plant	Frank Mann, Engr.
Kan.	Parker	Sept. 20	Electric light plant	O. C. Conrad, City Clk.
Minn.	St. Paul	10.30 a.m., Sept. 20	Furnishing and maintaining incandescent gas lamps and connections for 1916	Aug. Hohenstein, Pur. Agt.
Pa.	Williamsport	10 a.m., Sept. 20	Lighting city for three, five or ten years	Saml. Stabler, Supt. P. A.
D. C.	Washington	10 a.m., Sept. 21	Arc lamps, carbons, telephone outfit, switchboards & other electrical apparatus	Samuel McGowan, Paymaster General
N. Y.	New York	2.30 p.m., Sept. 24	Power house at Manhattan State Hospital; cost, \$200,000.	L. F. Pilcher, State Architect, Albany.
Neb.	Ord	Oct. 1	Electric light plant, estimated cost \$22,691	J. C. Work, Mayor
N. C.	Hickory	Oct. 12	Lighting streets and operating electric plant	S. C. Cornwell, City Mgr.
D. C.	Washington	10 a.m., Nov. 17	Central light and power plant	Supervising Architect.

FIRE EQUIPMENT

N. Y.	Binghamton	4 p.m., Sept. 22	Furnishing and installing fire alarm equipment	D. W. Foster, Clk. Bd. Con. & Sup.
D. C.	Washington	10 a.m., Sept. 28	Fire and garden hose; metallic flexible copper hose	Samuel McGowan, Paymaster General

BRIDGES

Kan.	Ellsworth	Sept. 18	280-ft. steel & conc. bridge; repairing 250-ft. steel bridge	G. R. Wolf, Co. Engr.
O.	Delphos	Noon, Sept. 18	Seven 100-ft. steel bridges and smaller bridges	S. S. Breckenridge, Secy., 1st Nat. Bk. Bldg.
Minn.	Green Valley	2 p.m., Sept. 18	Town line bridge	John Sharrett, Town Clk.
O.	St. Clairsville	Set. 20	Constructing steel truss bridge and reinforced concrete culvert	Emerson Campbell, Co. Aud.
N. J.	Elizabeth	2.30 p.m., Sept. 20	Bridge construction	J. L. Bauer, Co. Engr.
O.	New Lexington	10 a.m., Sept. 20	Constructing bridge	C. M. Foraker, Aud.
Kan.	Oswego	Sept. 20	Two 45-ft. concrete arch bridges	F. Barnes, Co. Clerk
Ark.	Eldorado	10 a.m., Sept. 21	Constructing bridge	W. H. Hawkins, Chr. Comrs.
N. Y.	Dunkirk	8 p.m., Sept. 21	Reinforced concrete culvert	A. D. Toomey, City Clk.
O.	Cleveland	11 a.m., Sept. 22	Concrete bridge	W. A. Stinchcomb, Co. Surv.
Conn.	Westport	2 p.m., Sept. 22	Bridge construction	C. J. Bennett, State Hwy. Comr., Harrisburg, Pa.
O.	Delphos	noon, Sept. 22	Constructing street bridges	H. J. Lawler, Co. Aud., Lima.
N. Y.	Binghamton	4 p.m., Sept. 22	Constructing five concrete highway bridges	D. W. Foster, Clk. Bd. Con. & Sup.
Minn.	Olivia	1 p.m., Sept. 23	Constructing two highway bridges	J. L. Johnson, Co. Aud.
O.	Canton	10 a.m., Sept. 24	Reconstructing floor system of steel bridge	Co. Comrs.

BIDS ASKED FOR

STATE	CITY	REC'D UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
China,	Hankow	Sept. 25..	Supplying 845 tons steel bridges.....	R. W. Hunt & Co., Monongahela Bldg., Pittsburgh, Pa.
O.,	Eaton	Sept. 25..	Bridge across Little Creek.....	G. W. Rehruess, Co. Aud.
Minn.,	Walker	2 p.m., Sept. 25..	Bridges and concrete culverts.....	G. A. Ralph, Engr., 16 Fulton Bld., St. Paul
N. D.,	Bowbells	2 p.m., Sept. 27..	Constructing bridge.....	G. K. Melby, Co. Aud.
N. J.,	N. Brunswick	2.30 p.m., Sept. 27..	Reinforced concrete slab bridge.....	A. J. Gebhardt, Dir. of Bd. Freeholders
Minn.,	Waseca	2 p.m., Sept. 27..	Reinforced concrete culvert.....	Theo. Peterson, Co. Aud.
Pa.,	Philadelphia	Noon, Sept. 27..	Constructing abutment and superstructure of bridge.....	S. T. Wagner, Ch. Engr., 520 Reading Terminal
Mo.,	Kansas City	Sept. 28..	Grading, 695,000 cu. yds.; concrete arch bridge.....	F. Babelman, Park Engr.
Kan.,	Leavenworth	Sept. 28..	Constructing 26 new bridges.....	Joseph Voorhees, Twn. Clk.
Pa.,	Uniontown	Sept. 28..	Plate girder bridge with concrete foundations.....	Co. Controller.
Pa.,	Greensburg	noon, Sept. 29..	Erecting plate girder bridge; removing old bridge.....	Harry Kisinger, Co. Controller.
Pa.,	New Castle	11 a.m., Sept. 30..	Steel bridge over Shenango river.....	James R. Lamoree, Clk. Co. Comrs.
Pa.,	Harrisburg	10 a.m., Sept. 30..	Constructing eighteen bridges, 4 to 70-ft. span, steel and concrete.....	R. J. Cunningham, State Hwy. Comr.
Minn.,	Mankato	Oct. 1..	500-ft. concrete bridge, cost \$70,000.....	H. F. Blomquist, City Engr.
N. Y.,	Dickinson	7 p.m., Oct. 1..	Constructing highway bridge.....	H. Ludington, Supt. Hwys. Binghamton
N. Y.,	Binghamton	10 a.m., Oct. 4..	Removing old bridge and constructing new.....	C. G. Bailey, Supt. Hwys.
Wyo.,	Newcastle	2 p.m., Oct. 5..	Constructing wooden bridge.....	W. H. Dobson, Co. Clk.
Kan.,	Lawrence	Oct. 6..	Constructing steel bridges.....	H. Broecker, Co. Clk.
Kan.,	Lawrence	Oct. 6..	Reinforced concrete bridge over Kaw river.....	County Clerk
Minn.,	Breckenridge	Oct. 8..	Six steel culverts and 11 steel bridges, cost \$12,228.....	P. E. Truax, Co. Aud.
S. C.,	Beaufort	Oct. 12..	120-foot span steel or concrete bridge.....	W. H. Hull, Sec. Co. Comrs.
MISCELLANEOUS				
N. Y.,	New York	10.30 a.m., Sept. 20..	300 tons asphaltic cement.....	Douglas Mathewson, Pres. Bronx.
Minn.,	St. Paul	10.30 a.m., Sept. 20..	Cement, sand and other paving materials.....	Aug. Hohenstein, Pur. Agt. District Comrs.
D. C.,	Washington	2 p.m., Sept. 20..	Constructing retaining wall.....	Isadore Wachsmann, Sec. Bd. C. & S.
N. Y.,	Albany	3 p.m., Sept. 20..	Furnishing filter sand.....	Col. A. L. Smith, Depot Q. M. Army Bldg.
N. Y.,	New York	11 a.m., Sept. 21..	One 3-ton motor truck chassis and from one to ten 1½-ton motor truck chassis.....	O. M. Bowen, Warden.
N. J.,	Greystone Park	Sept. 22..	Installing incinerator plant at state hospital.....	Maintenance Comm., School Dept.
Mass.,	Beverly	5 p.m., Sept. 22..	Grad. & gravel, school grounds, pav. driveway & const. concrete steps and an iron fence.....	S. C. Harrison, Jr., Chr. Pub. Works Comm.
Fla.,	Jacksonville	8 p.m., Sept. 27..	Constructing concrete swimming pool.....	Bd. Commerce & Navigation
N. J.,	Trenton	Sept. 28..	Dredging waterways.....	A. M. Taylor, Dir. City Transit.
Pa.,	Philadelphia	Noon, Oct. 19..	26,624 ft. 2-track elevated railway.....	

STREETS AND ROADS

Miami, Ariz.—The Gila County Board of Supervisors have canvassed vote on \$500,000 highway bond election. There were 580 votes for and 204 against.

East Sacramento, Cal.—The needed repairs to M. St. road are about to be made, according to Commissioner of Streets M. J. Burke. Burke says he will put his road machine to work on highway between Yardley Ave. and the city limits at Brighton. The road will be scarified, rounded up and packed. M St. from 31st St. to Yardley Ave. has been ordered up for permanent improvement. Work of installing curbs, gutters and sidewalks is progressing.

Los Angeles, Cal.—Ordinance has been adopted for paving of Baxter St. from Echo Park Ave. to Lemoyne St. and other streets, also for improvement of De Longpre Ave. from Normandie Ave. to Kingsley Drive.

Orville, Cal.—By unanimous vote of Board of Supervisors strip of land on west side of main thoroughfare of town of Durham, approximately 1,500 ft. long and 20 ft. wide, on right of way of the State Highway, has been ordered paved.

Pasadena, Cal.—Four bidders for work of paving Glenarm St. submitted exactly same figure and low man is just three-tenths of cent below all others. Contractors Holloway, Cox and Haddock offered to do the work at 11.5 cts. a sq. ft. and Contractor T. C. Breitenstein put in a bid of 11.2 cts. All bids were referred to Commissioner Allin.

Santa Barbara, Cal.—Totals made Aug. 31 of results of special election showed that proposition to bond county for \$1,000,000 to complete coast route of highways through San Marcos pass and join it with highways through Kern county had failed by about 200 votes to poll necessary two-thirds majority.

Santa Clara, Cal.—Various paving propositions are being discussed.

San Diego, Cal.—When good roads committee meets preliminary measures will be taken for campaign to carry bond issue of million and a half, more or less, in order to improve and maintain county highways.

San Francisco, Cal.—Board of Works

has approved specifications for second part of Twin Peaks Blvd., cost of which is estimated at \$75,000, and will receive bids on Sept. 15. Work on first part is under way. This scenic driveway around Twin Peaks is to be finished in few months.

Stockton, Cal.—City Council has opened bids for three big street improvement jobs and contracts will be awarded at session to be held Sept. 3. Bids were opened for work under three resolutions of intentions, Nos. 527, 528 and 529. Resolution of intention No. 527 calls for paving, sidewalks, curbs and gutters of North Commerce and North Center Sts. from North St. to Ash St. and from Walnut and Ash Sts. from El Dorado to the west line of Sperry addition. The engineer's estimate for the work was \$31,569.37. The bids submitted were as follows: Federal Construction Co., \$32,401.04; Guy T. Covault, \$31,766.68; Clark & Henery, \$32,469.54; Ransom-Crummey, \$31,384.86; W. H. Paul, \$26,148.76. Resolution of intention No. 528 calls for the improving of North El Dorado St. The city engineer's estimate was \$20,384.20. The bids were: Guy T. Covault, \$21,501.18; Federal Construction Co., \$20,710.34; Ransom-Crummey, \$20,800.25; Clerk & Henery, \$20,267.82. Resolution of intention No. 529 calls for the improvement of North Commerce and North Center Sts. north of Wyandotte St. The engineer's estimate was \$25,942.06. The bids were: Guy T. Covault, \$27,554.57; Federal Construction Co., \$25,994.33; Clark & Henery, \$27,503.44; Ransom-Crummey Co., \$23,710.51; W. H. Paul, \$21,969.

Stratford, Conn.—Taxpayers of town have appeared before committee of three members of Board of Finance in town hall and recommended that members of that board appropriate sums of money aggregating several thousands of dollars for various town purposes. One of several recommendations was that of \$15,000 to be used for laying sidewalks in town where they were needed.

Miami, Fla.—Street and sewer bonds in sum of \$100,000 have been sold to William R. Compton Co., St. Louis, Mo., for \$101,377.11.

Sanford, Fla.—Election for bonds in

sum of \$450,000 held in Seminole County carried for bonds by handsome majority. This means brick roads from Sanford to Oviedo; Geneva to the Lake County line, and from the special district line to the Orange County line.

Sarasota, Fla.—It is expected that work will start within 60 days on special Sarasota-Venice district road and bridge system, under the \$250,000 bond issue voted last March.

Tarpon Springs, Fla.—Several miles of sidewalk are to be laid in Tarpon Springs under municipal supervision under resolution of council to fill gaps in sidewalk system in residential section immediately surrounding business district. Determined that sidewalk system must be finished in thickly populated section, council now is advertising for bids on one lot of approximately 100,000 sq. ft. of sidewalk, which will add about three miles more to the system.

Cartersville, Ga.—The Bartow County Board of Commissioners has decided to surface road across Allatoona mountain immediately.

Springfield, Ill.—Paving of Converse Ave., between 9th and 15th Sts., was assured when Board of Local Improvements voted to begin work immediately.

Sterling, Ill.—Purchase of roller and scarifier is recommended.

Streator, Ill.—A concrete road extending from Cairo to Rockford, passing through Streator, is latest road agitation that is now being propounded down in southern part of state. It is hoped that consent of Governor E. M. Dunne can be secured to put matter before special session of legislature in case executive decides to call such a session. Plan is to bond state for \$20,000,000 to cover cost of 1,000 miles roadway. This, of course, will necessitate vote of the people.

Brazil, Ind.—County Commissioners have received bids for construction of roads, but no contracts were awarded: Johnson Road, Jackson Township—McCullough & Landine, \$3,448.90; M. L. LaSalle, \$3,500; Skelton & Butler, \$3,274; J. H. Ringo, \$3,480; Campbell & Hawkins, \$3,387.50; David Stigler, \$3,186; Martin & Hendricks, \$3,300; O. L. Tribble, \$3,084.40. Perkins Road, Posey

Township—Dietz & Son, \$3,840; Chas. Crabb, \$3,810; Skeiton & Butler, \$3,963; Campbell & Hawkins, \$3,587.50; O. L. Tribble, \$3,640. McCullough Road, Jackson Township—David Stigler, \$4,190; Campbell & Hawkins, \$3,482.50; Skeiton & Butler, \$4,291; O. L. Tribble, \$3,894.70; Dietz & Son, \$4,274; McCullough & Landine, \$4,455.30.

Fort Wayne, Ind.—It has been determined to improve Rudisill Blvd. from Calhoun St. to Broadway by grading and macadamizing roadway, etc.

Fort Wayne, Ind.—Specifications have been approved and resolution adopted for following improvements: Walks on both sides of Winch St., from Grant to Dubois; walks on the west side of Piqua Ave., Gummer to Rudisill; walks on the east side of Victoria Ave., Packard to Darrow; walks on both sides of Murray, Calhoun to Barr; walks on the north side of Organ Ave., Indiana to Beaver; walks on both sides of Second St., Wells to Clark; walks on north side of Fourth St., Runyon to the G. R. & I. tracks; grading Winch St., Warren to Lombard; paving the alley between Lewis St. and Douglas Ave., from Harrison to Webster.

Fort Wayne, Ind.—Bids submitted by Moellering and Brooks Construction companies for city's portion of work of grade separation at Osage St. were taken under advisement by board of works.

Indianapolis, Ind.—Public hearings on resolutions to resurface Capitol Ave. from Indiana Ave. to 10th St., and between 10th and 16th Sts., were held by the Board of Public Works. Both resolutions were confirmed and efforts will be made to have improvement completed this fall. Bids will be received two ways—using present foundation and building new foundation. Board also confirmed resolutions for paving following streets: University Ave., between Dewey and Oak Aves.; Garfield Ave., between Michigan and Walnut Sts.; Tuxedo St., between 10th and 16th Sts.; Ohmer Ave., between University and Downey Aves., and Chester Ave., between Michigan and Walnut Sts.

Muncie, Ind.—The members of special committee of Council have adopted following improvement resolution and instructed city clerk to advertise for bids for construction of cement sidewalk on both sides of 13th St. from Madison to Jefferson Sts.; for construction of cement sidewalk on east side of Liberty St. from Willard St. to Seymour St., and for construction of cement sidewalk in Hackley St. from Washington St. to Broadway St.

Peru, Ind.—An issue of \$4,120 highway improvement bonds has been awarded First National Bank of Peru at premium of \$5.25.

Winchester, Ind.—The bond issue of \$13,100 for the Evans road in Green Township was sold by County Treasurer Puckett to Commercial National Bank of Union City at a premium of \$47.16.

Clinton, Ia.—Fifth Ave., between First and Second Sts., is to be repaved this year. The plan is to receive bids for work on earliest date, and to complete improvement before winter.

Creston, Ia.—Bids have been advertised for 12,496 ft. of sidewalk. Theo. S. De Lay is City Engineer.

Des Moines, Ia.—A movement to gravel every mile of Polk County's 190-mile highway system at approximate cost of \$190,000, putting entire system in condition unparalleled by any system perhaps in middle west, has been started by Harry Barquist, chairman of Polk County Board of Supervisors.

Muscatine, Ia.—The Iowa Highway Commission has agreed to proposed plans for graveling of first three miles of Muscatine-Cone or "Burlington" Rd. according to letter received from Ames by J. D. Buser, chairman of County Board of Supervisors, and G. Halbfass, county engineer.

Pittsburg, Kan.—Ordinance has been passed to provide for issuance of general improvement bonds of city of Pittsburg, Kan., in sum of \$3,694.81, to pay for curbing of certain areaways and paving of certain intersections formed by street and alley crossings.

Pittsburg, Kan.—Resolutions to curb, gutter and pave 8th St. from Locust to Grand, 9th St. from Joplin to Grand and Elm St. from 7th to 11th have been passed.

Carlisle, Ky.—Road contracts for reconstruction of Carlisle and East Union and Carlisle and Parks Ferry Turnpikes by Clark County Construction Co., which was authorized by fiscal court of Nicolas County, were rejected

by state road department, which caused stopping of work for present. Court has readvertised for bids for construction of the roads.

Louisville, Ky.—Ordinances for improvement of Brent St., between Broadway and Vine St., and partly closing Nashville Ave., between Oak St. and the first alley south, were passed by Board of Aldermen at meeting of General Council Sept. 2.

New Albany, Ky.—At regular meeting of New Albany Board of Public Works Sept. 2, Samuel T. Mann, city engineer, submitted estimate on cost of proposed improvement of Conservative St. Cost was placed at \$2.99 a ft. for property owners on each side street which in aggregate amounts to \$2,796.62. An estimate on cost of proposed improvement of alley between Elkin and Culbertson Aves. from Vincennes to Thomas St., places cost at \$1.65 to property owners on each side, making total of \$4,173. Bids were opened on contract for improvement of Market St. from Silver west to first alley. Thomas McCulloch bid \$1.85 a foot and D. C. Collins bid \$1.91. A number of sidewalk improvements were ordered by board.

Owensboro, Ky.—Judge W. P. Sandige and other attorneys interested in contesting recent good roads bond election in this county, in which proposition to vote \$60,000 worth of bonds carried, but did not receive two-thirds majority, are making preparations to file suit and to make fight through courts to have it held majority is all that is required.

Haverhill, Mass.—Alderman Wood will ask city council for additional appropriation of \$500 to be added to appropriation for macadamizing of Chestnut St. from Park St. to Arlington Sq.

Duluth, Minn.—Minnesota Ave. was on Sept. 3 ordered paved from end of the present pavement at 38th St. to 43d St. Resolution adopted by Council at its special meeting orders a 21-ft. concrete pavement with concrete curbing from 38th to 39th St., and a 20-ft. concrete pavement, with no curbing, from 39th to 43d Sts. The entire improvement, it is estimated, will cost \$16,539. Next week contract for paving of Second alley, from Tenth to Twelfth Aves. east, will be awarded to D. H. Clough & Co., in their bid of \$2,921.20. The resolution was held over as contract is for more than \$1,000.

Eveleth, Minn.—Additional municipal work amounting to upward of \$40,000 has been ordered done by City Council. All work provided for in 1915 levy has been completed and improvements ordered will be levied for in 1916 budget. The additional work includes sidewalks, storm sewers, water mains replacements, service pipes and paving.

Grand Rapids, Minn.—Resolution has been passed calling for special election for purpose of voting on question of bonding county for \$150,000 for road purposes, purposes to which money is to be put being principally for funding road and bridge fund which has been more or less overdrawn owing to necessity of paying contracts already made and to finish up certain roads which are being built at this time. Proposition was originally to bond county for \$500,000, but commissioners decided to ask only for enough to fund road and bridge fund, and to finish the work which is started.

St. Cloud, Minn.—City Commissioners are planning to purchase a tractor for street use.

St. Paul, Minn.—Fielding & Shepley are low bidders on contract for paving University Ave. from Rice St. to Dale St. The bid of Fielding & Shepley for inner section of street, which is to be paved this fall, is \$55,300, or a fraction less than \$2.43 a yard for 22,775 sq. yds. in stretch between Rice and Dale Sts.

Carthage, Mo.—A north-and-south road, in Union township, the north end of which is situated 7½ miles southeast of court house, is to be opened, according to agreement of people of neighborhood with county court. This will open road on section line where there has never been road. It will begin at point a half mile north of Erie school house and extends thence 1½ miles due north, incidentally crossing Center Creek at ford a little west of section line.

Joplin, Mo.—City Council has ordered in more than three miles of sidewalks on East Seventh St. Estimates for work will be made at once and it is expected that work will be rushed to completion this fall. Improvement was ordered upon motion of Mayor McIndoe.

Springfield, Mo.—It has been decided to petition commissioners of Springfield eight Mile Road District for financial aid in construction of 4¼ miles of road within Cherry St. special road district.

Wright City, Mo.—It was proposed at meeting, attended by more than 150 farmers and others living along road connecting Wright City with Troy, that work to improve road be started at once, and that Lincoln and Warren counties expend approximately \$5,000 each for equipment with which to carry out the project. The proposed improvements will provide a modern roadway from Troy to Wright City, a distance of 12 miles, connecting with the State highway from St. Louis to Kansas City at Wright City.

Sheridan, Mont.—Delegates from Virginia City, Twin Bridges and Sheridan met at Sheridan Commercial Club rooms Sept. 3 for purpose of putting into effect scheme to advertise park-to-park highway from Hamilton via Dillon, Twin Bridges, Sheridan, (Virginia City and Madison Valley to Yellowstone, the western entrance of the Yellowstone National Park.

Fremont, Neb.—Property owners in six districts for which bids were asked for paving will have wide range of prices and material to select from as result of figures compiled by Board of Public Works, which opened and tabulated the offers on Sept. 1. Seven firms submitted figures on work to be done. Altogether thirteen kinds of material, including various styles of construction. Board members after working for over two hours arranged table showing lowest bidder for each kind of material in each district. Report was made to City Council at meeting Sept. 3. Following are figures by districts, the amounts given being for a square yard: District No. 23, East 4th St., concrete—Samuel Friedman, Omaha, \$1.44½; J. M. Roberts, Omaha, \$1.44; O. D. Sears, Fremont, \$1.34; J. S. McLaughlin, Red Oak, Ia., \$1.43; Katz Construction Co., Omaha, \$1.35. District No. 24, West 8th St., sheet asphalt—J. S. McLaughlin, \$1.79; asphalt concrete, National Roof Co., Omaha, \$1.52; bitulithic, Ford Paving Co., Omaha, \$1.94; granite concrete, O. D. Sears, \$1.36; repressed brick, J. M. Roberts, \$2.10. District No. 25, West 9th St., sheet asphalt—McLaughlin, \$1.79; asphalt concrete, National Roof Co., \$1.52; bitulithic, Ford Paving Co., \$1.94; granite concrete, A. D. Sears, \$1.36; repressed brick, J. M. Roberts, \$2.11. District No. 26, Nye Ave., sheet asphalt—McLaughlin, \$1.79; asphalt concrete, National Roof Co., \$1.52; bitulithic, Ford, \$1.94; granite concrete, Sears, \$1.36; repressed brick, Roberts, \$2.09. District No. 27, Nye Ave., sheet asphalt—McLaughlin, \$1.79; asphalt concrete, National Roof Co., \$1.52; bitulithic, Ford, \$1.94; granite concrete, Sears, \$1.35; repressed brick, Roberts, \$2.07. District No. 28, Military Ave., sheet asphalt—J. S. McLaughlin, \$1.79; asphalt concrete, National Roofing Co., \$1.52; bitulithic, Ford Paving Co., \$1.94; granite concrete, A. D. Sears, \$1.36; repressed brick block and asphalt filler, J. M. Roberts, \$2.13.

Grand Island, Neb.—Bids will be received until 8 p. m. Sept. 15, for purchase of \$28,000 paving district bonds for paving district No. 13. H. E. Clifford is city clerk.

Elizabeth, N. J.—Board of Works has applied for \$80,676.75 with which to repave Elizabeth Ave., from Broad St. to Seventh St. Board stated that owners of 1,564 ft. had objected to improvement, but that total frontage in street was 6,936 ft. The present blocks will be re-clipped and relaid on concrete foundation, city and property owners dividing expense. Money is expected to be given by Council, but work is not likely to start before spring.

Garwood, N. J.—The ordinance for improvement of Willow Ave. from Centre St. to East St., by laying cement curbing and gutters and macadamizing roadway its entire width, was passed upon final reading at meeting of Borough Council. The ordinance to lay cement sidewalks on north side of North Ave. from Maple St. to Westfield town was passed upon final reading.

Newark, N. J.—Resolution for paving of Washington St. from Central Ave. to Blecker St. with wood block on 6-in. foundation has been adopted.

Newark, N. J.—Board will ask for new bids Sept. 30 for meter repair station at 14th Ave. and South Eighth St. and for the paving of North Sixth St., north of Bloomfield Ave., with bitulithic.

Newark, N. J.—Bonds amounting to \$15,000 to provide funds to improve county roads and institutions were disposed of by finance committee of Board of Freeholders Sept. 8 to Robert Winthrop & Co., 30 Wall St., New York, the highest among five bidders. The bid of the Winthrop Co. was \$101.41 on entire issue, consisting of two series of \$270,000 and \$200,000 respectively, for road work, and \$145,000 for additions to county penitentiary.

Phillipsburg, N. J.—Resolutions authorizing issue of \$30,400 worth of improvement bonds and \$5,500 worth of renewal bonds have been adopted by town commissioners. Improvement bonds are issued for repaving of South Main St., which was recently completed. Entire cost of work amounted to \$34,275.59. Of this amount Easton Transit Co. pays \$3,793.58 for repaving 18 ins. on either side of its rails, leaving total cost to town of \$30,482.01.

Plainfield, N. J.—Councilman Blatz has offered ordinance authorizing laying of macadam on East Fourth St., between Richmond and Washington Sts. Ordinance was passed on first and second reading, ordered engrossed and advertised, and October 4th was set as date for public hearing. Another ordinance authorizing improvement of certain streets with permanent pavement was passed on first and second reading, ordered advertised and hearing will be held on October 4th. The council will issue bonds to amount of \$5,000 for this improvement. The bonds will bear interest at 5 per cent. and may be retired after three years.

Westfield, N. J.—Bids on improvement of Dudley Ave., Alston Rd. and Scotch Plains Ave., have been received from Charles Lents, Weldon Contracting Co., and J. W. Butcher, and referred to road committee.

West Orange, N. J.—Further consideration by West Orange Town Council of ordinance providing for laying permanent pavement on Valley Rd., between Main and Washington Sts., has been temporarily abandoned. At meeting of town council it was decided to ask County Board of Freeholders to accept thoroughfare from the South Orange Village line to Washington St.

Albany, N. Y.—An ordinance for improvement of Kransk St. from Seymour Ave. to Second Ave. has been passed by Common Council.

Dobbs Ferry, N. Y.—A \$150,000 proposition has been carried for tricking Albany Post road through Dobbs Ferry.

Dolgeville, N. Y.—That effort will be made to pave State St. and Faville Ave. soon is evident from attitude taken Sept. 2 by Village Board, which virtually decided to submit to taxpayers next spring appropriations for improvement of both of those thoroughfares.

Dunkirk, N. Y.—Purchase of asphalt plant is being considered.

Dunkirk, N. Y.—Following are bids received for proposed pavement on Taft Place: (a) James McNamara, (b) Dunkirk Construction Co.: Brick pavement on concrete foundation (a) \$1.48 per sq. yd., (b) \$1.64 per sq. yd.; sheet asphalt on concrete foundation, (a) \$1.71 per sq. yd., (b) \$1.74 per sq. yd.; two-course concrete pavement, (a) \$1.25 per sq. yd., (b) \$1.28 per sq. yd.; creosoted lug block, (a) \$2.02 per sq. yd., (b) no bid; concrete curb and gutter, (a) 47c. per lin. ft., (b) 49c. per lin. ft.; drain tile, 10c. per lin. ft., (b) 10c. per lin. ft.; excavation, 43c. per cu. yd., (b) 45c. per cu. yd.; reinforcement in concrete pavement, (a) included in price bid per sq. yd., (b) 5c. per lb. Summary of bids: Brick on concrete foundation (a) \$8,485.50, (b) \$9,286.50; sheet asphalt on concrete foundation (a) \$9,566.50, (b) \$9,756.50; two-course concrete pavement, (a) \$7,404.50, (b) \$8,244.50; creosoted lug block pavement, (a) \$11,023.50, (b) no bid. James McNamara is lowest bidder on all classes of pavement. W. H. Shelton is City Engineer.

Rensselaer, N. Y.—Acting in conformance with promises made to voters of city previous to last campaign by Republicans, Board of Aldermen has declared its intention of doing about \$30,000 worth of paving work during coming year. Not being able to do all work that it wishes to do with brick, concrete will be used on several of the streets. Brick will be used to improve Riverside Ave. from Belmont Pl. south to the Knickerbocker ice house, and First St. from Central Ave. to Fowler Ave.

Rochester, N. Y.—The Driving Park Ave. bridge is to be paved with wood block. Commissioner of Public Works

Herbert W. Pierce has said that enough money was left out of fund of \$17,000 appropriated for repairs so that bridge could be paved.

Rochester, N. Y.—On bids that were received for new road leading from street up to Iola Sanatorium buildings, two of them are now being considered by Purchasing Agent Henry W. Morse and Dr. Montgomery E. Leary, who have been appointed committee to decide. Brick road and cube road are two different styles which are being considered. L. C. Buckland is lowest bidder on brick style with bid of \$2,649.09, while C. Earl Pratt is lowest bidder on cube style with bid of \$2,691.86.

Charlotte, N. C.—Construction of sidewalks in North Charlotte is being planned.

Columbus, O.—Road improvement bonds in sum of \$20,500 will be sold on Sept. 30 at 10 a. m. John Scott is Clerk of Board.

Columbus, O.—Resolution has been adopted to improve superstructure of North High St. Viaduct to Poplar Ave., by grading, draining, curbing, repaving roadway with asphalt in city of Columbus, O., in accordance with plans, specifications, estimates and profiles of proposed improvement prepared by chief engineer.

Lisbon, O.—The \$30,000 worth of Elk-run Township road improvement bonds have been purchased by Peoples State Bank at Lisbon at par with accrued interest. There were but three bidders. Bids on work of paving and improving the roads of township will be advertised for at once, so that work of improvement can go forward without delay.

Marletta, O.—Resolution has been adopted declaring it necessary to improve Quarry St. from Seventh St. to Sycamore St., Bank St. from Quarry St. to Orchard St., and Orchard St. from Bank St. to High St., by paving.

Mount Vernon, O.—Ordinance has been passed authorizing the improvement of Gambier St. by paving.

Niles, O.—Ordinance has been passed to issue bonds in sum of \$4,721.89 for purpose of paying part of cost of paving Pratt St. from Erie Railroad to East Park Ave.

Salem, O.—Bids for road improvement in St. Clair township totaling about 3 1/2 miles, recently passed by voters of that township when they voted for a \$40,000 bond issue for better roads, were opened Sept. 2. According to bids submitted by various contractors roads to be constructed will be of concrete, 10 ft. in width with crushed stone on both sides. Rinehart Bros. of East Liverpool were lowest bidders on Sprucevale or Clarkson Rd., beginning at Calcutta and running north, for a distance of 1 mile. Their estimate for this work was \$12,553.86. There were two bidders for the mile east and one-half mile west from Calcutta on what is known as the Smiths Ferry Rd. and the Cannons Mills Rd. Rinehart Bros. bid \$11,000.61 and Clifford & Shanofelt \$12,275.90 for this job. Three contractors submitted estimates for work on improvement of the road, which leads from the brick paving on the Calcutta Rd., just a short distance south of the village of Calcutta and connects the Y. & O. substation. This road is a little over a mile in length. The bids for the various contractors were: Hinton & Cunningham, \$16,953.70; Rinehart Bros., \$16,503.59 and McLaughlin & Allison \$15,829.33. None of contracts were let at meeting, but it is understood that lowest bidders on all three roads will be awarded work within the next few days.

Springfield, O.—Advertisements will be started at once for bids on Woodward Ave. paving which will conclude city's program of newly paved streets for this year. Asphaltic concrete is specified and the street will be paved from Perrin Ave. to Glenwood.

Toledo, O.—Ordinances have been passed for improvement of streets.

Urbana, O.—Purchase of road roller is being discussed.

Butler, Pa.—The immediate paving of section of East Cunningham St. between Cliff and Monroe, has been decided upon by City Council and it is expected that contract for work will be awarded at once when paving committee goes over tabulation of bids submitted to Council at September meeting. There were three bidders for this work. Tony Morelli, J. Norman Boyer and Fred Harner, the bids having been referred to paving committee and city engineer for tabulation, with instructions that contract be awarded to lowest bidder.

Chester, Pa.—New street sweeper has been ordered.

Chester, Pa.—Bids have been opened for paving of several streets of Marcus Hook at meeting of Borough Councilmen and several matters of minor importance given attention. The contract for street paving, which will include improvement of Marshall Ave., Sixth, Seventh and Eighth Sts., will be awarded at next meeting.

Chester, Pa.—Bids for street paving were received. After being read by City Clerk they were referred to city engineer for tabulation and will be acted upon Sept. 9. The bids follow: with the Continental Public Works Co. furnishing bituminous asphaltum and the Union Co. filtertime: 13th St., from Edgemont Ave. to Crosby St., Continental Co., \$1.81 per sq. yd., without brick gutters, and \$1.81 per sq. yd., with gutters; Union Co., \$1.73 without brick gutter and \$1.84 with gutters; 24th St., from Crosby to Madison Sts., Continental Co., \$1.80 per sq. yd., without gutters and \$1.86 per sq. yd. with gutters; Union Co., \$1.74 without gutters and \$1.81 with gutters; Ninth St., from Reaney to Engle Sts., Continental Co., \$1.71 without gutters and \$1.80 with gutters; Union Co., \$1.74 without gutters and \$1.81 with gutters; 11th St., from Edgmont Ave. to Crosby St., Continental Co., \$1.76 without brick gutters and \$1.86 with gutters; Union Co., \$1.95 without gutters and \$2.10 with gutters; 11th St., Highland Ave. to Harwick St., Continental Co., \$1.77 without gutters and \$1.80 with gutters; Union Co., \$1.86 without gutters and \$1.95 with gutters; Wilson St., from Front to Sixth St., Continental Co., \$1.77 without gutters and \$1.82 with gutters; Union Co., \$1.71 without gutters and \$1.78 with gutters; Flower St., from Second to Third Sts., Continental Co., \$1.74 without gutters and \$1.80 with gutters; Union Co., \$1.70 without gutters and \$1.77 with gutters; Ninth St., from Edgmont Ave. to Ninth St. bridge, Continental Co., \$1.76 without gutters and \$1.83 with gutters; Union Co., \$1.74 without gutters and \$1.77 with gutters; Caldwell St., Third to Sixth Sts., Continental Co., \$1.74 without gutters and \$1.80 without gutters and \$1.87 with gutters; Edgmont Ave., from 24th St. to City Lane, Continental Co., \$1.77 without gutters and \$1.84 with gutters; Union Co., \$1.81 without gutters and \$1.84 with gutters.

Connellsville, Pa.—Ordinance has been adopted providing for repaving of portions of Pittsburg St., between Fayette St. and North Alley, Grape Alley and Orchard Alley, and Main St. and Crawford Ave.

Erie, Pa.—Ordinance has been adopted providing for grading, draining and the curbing on both sides of the roadway of Poplar St., from 29th St. to 32d St.

Philadelphia, Pa.—Average unit of low bids in letting of Aug. 31, 1915; total amount of all low bids, \$273,914.48. Grading, total amount of low bids, \$16,733.19; grading, 55,488 cu. yds.; average price of \$0.243 per cu. yd.; F. Mark Contr. Co., 21st and Somerset Sts.; Edwin Stott, 6430 N. Water St.; T. P. Lee, 5629 Cherry St.; Thos. Connor, 3329 N. 5th St.; John Devlin, Jr., Hancock & Thompson Sts.; P. J. Snyder & Co., Bailey Bldg.; Harry Magee, 7121 Grays Ave. Asphalt paving—Total amount of low bids, \$32,518.50; asphalt pavement, including 6-in. concrete base, average price of \$1.572 per sq. yd.; Eastern Pav. Co., Penn Square Bldg.; Union Pav. Co., 30th & Locust Sts. Paving with vitrified block—Total amount of low bids, \$992.31; vitrified block pavement, including 6-in. concrete base, average price of \$2.480 per sq. yd.; Phila. Paving Co., 1345 Arch St. Paving with bituminous pavement—Total amount of low bids, \$11,862; bituminous pavement, including 6-in. concrete base and paint coat, average price of \$1.600 per sq. yd.; Union Paving Co., 30th & Locust Sts. Repaving with asphalt—Total amount of low bids, \$46,131.25; asphalt pavement, including 6-in. concrete base, average price of \$1.466 per sq. yd.; Union Paving Co., 30th & Locust Sts.; Barber Asphalt Paving Co., Land Title Bldg.; Eastern Paving Co., Penn Square Bldg. Repaving with vitrified block—Total amount of low bids \$7,186.35; vitrified block pavement, including 6-in. concrete base, average price of \$2.340 per sq. yd.; Phila. Paving Co., 1345 Arch St. Repaving with granite block—Total amount of low bids, \$45,433.76; granite block pavement, including 4-in. concrete base; average price of \$3.037 per sq. yd.; F. Mark Contr. Co., 21st & Somerset Sts.; McNichol Paving & Const. Co., 1923 Cherry St.; James Kane, 4840 N. Mascher St.; Phila. Paving Co., 1345 Arch St. Repaving with wood

block—Total amount of low bids, \$13,151.94; wood block pavement, including mortar cushion and 6-in. concrete base, average price of \$2,809 per sq. yd.: Richard Lamb, 136 Liberty St., New York; McNichol Paving & Const. Co., 1923 Cherry St. Surfacing waterbound macadam—Total amount of low bids, \$37,078.45; waterbound macadam, 3-in. on a 5-in. broken stone base, average price of \$0.983 per sq. yd.: J. F. Shanley & Co., Commercial Trust Bldg.; Dwyer & Co., 1524 Chestnut St.; P. J. Snyder & Co., 903 Bailey Bldg.; Pugh & Hubbard, 731 Witherspoon Bldg.; Curtis Bros., Torresdale Ave. & Magee St. Surfacing bituminous macadam—Total amount of low bids, \$11,757.34; bituminous pavement, including 5-in. concrete base, average price of \$1.611 per sq. yd.: Union Paving Co., 30th & Locust Sts. Resurfacing waterbound macadam—Total amount of low bids, \$2,641.80; waterbound macadam on old base, average price of \$0.412 per sq. yd.: P. J. Snyder & Co., 903 Bailey Bldg.; Manwaring & Cummins, Hale Bldg.; Pugh & Hubbard, 731 Witherspoon Bldg. Resurfacing with bituminous macadam (penetration)—Total amount of low bids, \$5,590; bituminous macadam resurfacing, average price of \$0.690 per sq. yd.: P. J. Snyder & Co., 903 Bailey Bldg. Improvement of Passyunk Ave.—Total amount of low bids, \$42,836.59; asphalt pavement, including 6-in. concrete base, average price of \$1.425 per sq. yd.; granite block pavement, including 6-in. concrete base, average price of \$3.245 per sq. yd.: E. H. Vane, 712 Lincoln Bldg. W. H. Connell is Chief of Bureau.

Philadelphia, Pa.—Contracts were awarded Sept. 9 by Director Cooke of department of public works for street improvements which will cost \$273,914.49. The work includes grading, paving with asphalt, paving with vitrified block, resurfacing with bituminous macadam and other materials; widening and paving of Passyunk Ave. west of Broad St.; repaving with wood block, paving with bituminous pavement, repaving with asphalt, repaving with vitrified block and repaving with granite block. Some of contracts went to Senator McNichol and other to the Vares.

Punxsutawney, Pa.—Council has decided to accept none of bids submitted for paving of Pike St., and determined to do work by day, with street commissioner in charge.

Waynesboro, Pa.—Borough Council has directed that Potomac Ave. south of 5th St. be resurfaced.

Westmont, Pa.—Improvement bonds in sum of \$15,000 will be sold Oct. 4. Jas. A. Hamilton is Borough Treasurer.

Williamsport, Pa.—Ordinance providing for house sewer in Jefferson St. from West to Hepburn Sts., and in Hepburn St. from Front to Canal Sts., carrying an appropriation of \$1,275, has passed second and third reading.

Woonsocket, R. I.—Resolution appropriating \$6,600 for macadamizing Diamond Hill road has been sent to highway committee.

Greenwood, S. C.—The Commercial Bank of Greenwood was purchaser of \$100,000 for 30-year 5 per cent. bonds of city of Greenwood issued for street paving. Price paid was \$102.70.

Knoxville, Tenn.—The ordinance for issuance of \$90,000 worth of bonds for paving of Magnolia Ave. has passed two readings. W. A. Park, special engineer on improvements that are now under way, has estimated paving of Magnolia Ave. with sheet asphalt as costing \$86,882. Length of Magnolia Ave. that is to be paved is estimated by Engineer Park at 10,100 ft. This is from bridge to corporate limits.

Beaumont, Tex.—Bids on \$85,000 street improvement bonds and \$30,000 sewer extension bonds, which have already been approved by attorney general, will be opened by Council on October 4.

Salt Lake City, Utah.—Acting on recommendation of Commissioner Richard P. Morris, city commissioner, has decided to pave Sixth East and Fifth South to Ninth South and Sixth South, from Fifth East to Sixth East, one-half of the work to be done this year and balance next year. It is estimated that city's share of cost, including lowering of water mains and construction of storm sewer, will be \$20,650, and city commission passed motion by Mr. Morris, appropriating \$10,325 to pay city's share of work to be done this year, balance to be appropriated from next year's funds. Work to be done this year will be constructing of curb and gutters, lowering the water mains and construction of the storm sewer.

er. The pavement is to be laid next year. City recorder was authorized to advertise notice of intention at once.

Norfolk, Va.—Finance committee of City Council has approved public improvement committee's resolution to appropriate \$25,000 to purchase toll roads and bridges within city limits, through newly chartered corporation, acting as agent for city.

Norfolk, Va.—The Norfolk County road bond commission has received and taken under consideration report submitted by Engineer Murray of state highway commissioner's office. Engineer has estimated that to improve four toll roads in county with concrete and gravel will entail outlay of \$134,000, while improvement of four toll roads and other highways in county with macadam, sand and gravel will cost approximately \$198,600. In supplemental report regarding condition of county bridges and cost of improving them, it is estimated that it will require \$17,300 for work.

Norfolk, Va.—The resolution to appropriate \$1,400 for paving and improving Bowden's Ferry road between 27th and 28th Sts.; resolution appropriating \$100,000 for repair of two dams and spillways at Little Creek and repair of one dam and spillway at Lake Taylor and repair of clear water basin at city water works, and resolution to accept dedication of parks in Colonial Place and to appropriate \$300 therefor have been referred to finance committee.

Portsmouth, Va.—Reports were heard by road commission Sept. 3 from Road Engineer F. D. Murray concerning proposed improvements to highways leading from Portsmouth and Norfolk, and were taken under consideration. Mr. Murray's report is an extensive one and recommends that either bituminous concrete or macadam be used on heavy traffic thoroughfares, with sand clay in districts over which passage of vehicles is not so great. Those roads recommended for bituminous are as follows: Indian Toll Bridge, Princess Anne Turnpike, Broad Creek and Indian River Roads. It is recommended that extension of Bowers Hill Road be made with gravel surface, adding that if road be extended parallel with the Seaboard Air Line Railway to Stevers station, through the Nansemond County line, it will give shortest route between Portsmouth and Norfolk. Hodges Ferry Road, in opinion of engineer, should be improved with gravel. It is believed by Engineer Murray that Nansemond County will connect with this turnpike within the next two or three years. Other roads leading through counties are recommended to be improved with sand clay surfacing, which has given satisfaction in many districts.

Richmond, Va.—Sum of \$10,000 has been appropriated for opening of Taylor St.

Seattle, Wash.—Secretary of Board of Public Works has been instructed to immediately call for bids on Massachusetts paving contract, which was held up two weeks ago, and on Jackson St. retaining wall. Board also decided to investigate advisability of calling for bids on abstract work. No figures have been taken on this work for last five years. Bids were opened for 35th Ave. south for grading: Henry G. Niblett, \$2,581.50; B. H. Petley, \$2,612.40; E. Arnaldo & Co., \$2,541.10; J. E. Bannister, \$2,844.60; McGuire Bros., \$2,595.80; D. Parisi Co., \$2,565.45.

Racine, Wis.—Steps toward securing suitable street signs for city of Racine were taken at meeting of Common Council Sept. 7, when Ald. John Sieb introduced resolution instructing board of public works to advertise for bids for such signs. The resolution was referred to committee of the whole.

CONTRACTS AWARDED.

Pasadena, Cal.—To T. C. Breitenstein, contract for paving Glenarm St. His bid was \$5,824 for job complete.

San Francisco, Cal.—Board of Works has awarded Owen McHugh contracts to pave Arguello Blvd. in front of Odd Fellows' Cemetery, for \$4,428, and to pave north half of Fulton St. between 28th and 37th Aves., for \$11,188. Contract for grading 37th Ave., between Anza and Balboa Sts., has been awarded to Blanchard-Brown Co. for \$5,931.

Sarasota, Fla.—Construction work was started this week by Southern Asphalt and Construction Co. on part of \$100,000 system of paved streets that will be added to large amount that has been done last two years. In all there will be about ten miles of asphalt and brick.

Under new arrangement entire expense will be borne by property owners, instead of city paying one-third, but they will have ten years to pay in place of three years. The Georgia Engineering Co. has contract for brick paving, of which there will be about a mile.

Clearwater, Fla.—By Commissioners of Pinellas County, contract for construction of 73.34 miles of brick roads, to Edwards Construction Co., Tampa.

Peoria, Ill.—For paving N. Adams St. with brick awarded to Canterbury Bros., Peoria, at about \$17,157.

Brazil, Ind.—City Council has adopted plans and specifications for paving Blaine St., between Meridian St. and Forest Ave. Plans call for brick laid on sand cushion or crushed rock base with sand filler. Rock now on road will be used wherever possible with present curbing. Cost is estimate at \$1.25 per sq. yd., or about \$125 to each 160-ft. lot. B. F. Monce was given contract for construction of new concrete sidewalks on East Church St., between Alabama and Vandallia Sts. The bids follow: Jones & Underwood, 9½ cts. per sq. ft.; Jack D. Moore, 9¼ cts. per sq. ft.; B. F. Monce, 9 cts. per sq. ft.

Franklin, Ind.—The Commissioners of Johnson County, at meeting Sept. 6, awarded contract for construction of Park road, in Union Township, to Edward Barnett, at cost of \$11,150. Contract for building of Sheek road, in Pleasant Township, was let to J. W. Murphy, his bid being \$8,990.

La Porte, Ind.—Contracts for roads and bridges have been awarded and other business transacted at meeting of County Commissioners. The John Fritzen road in Kankakee Township was awarded to Wilson F. Brunt for \$12,278. Other bidders were Louis Martino, \$15,400, and George Cross, \$14,970. George Cross secured the contract for the Fred J. Selby road in Hanna Township, at \$11,135. Other bidders were F. Smith & Co., \$12,395; Louis Martino, \$12,200, and Wilson F. Brunt, \$12,331. Four bridge contracts were awarded and all were secured by W. A. Steigely. They were Young bridge in Johnson Township, \$757; the Wilson bridge in Cass Township, \$895; the Eickstaedt bridge in Cass Township, \$895, and the Marks bridge in Cass Township, \$623. Others who bid on these bridges were the Rochester Bridge Co., Wilhelm Bros., Barcus & Co., Winamac Const. Co., A. L. Arnold.

Muncie, Ind.—Final step towards construction of parking place for automobiles in space about court house was taken Sept. 4 by members of special committee of council when contracts for improvement of sidewalks were let. Three of contracts were awarded to W. H. Torrence and the contract for the improvement of the fourth sidewalk was awarded to William Birch. Contracts and bids are as follows: Improvement of Main street sidewalk to W. M. Torrence on bid of \$91 for cement curb and gutter and bid of \$743.90 for brick paving. Improvement of High St. sidewalk to W. H. Torrence on bid of \$91 for cement curb and gutter and bid of \$761.15 for brick paving. Improvement of Walnut St. sidewalk to W. H. Torrence on bid of \$91 for cement curb and gutter and bid of \$761.15 for brick paving. Improvement of Washington St. sidewalk to William M. Birch on bid of \$91 for cement curb and gutter and bid of \$730.62 for brick paving.

Des Moines, Ia.—For 68,000 cu. yds. grading to F. F. Balzer, Des Moines, Ia., at 22½ cts. per cu. yd.

Great Bend, Kan.—To Watts & Amerman of Salina for constructing approximately 20,671 sq. yds. asphaltic concrete pavement, 9,224 lin. ft. concrete combined curb and gutter and 7,690 lin. ft. concrete curb. H. A. Howland is Engr., McPherson.

Olathe, Kan.—For constructing approximately 3,800 sq. yds. vertical fiber brick to J. H. Cosgrove, Olathe, at \$7.613. Other bids: D. M. Boddington, Kansas City, Kan., \$8,700; E. F. Wilcox, Kansas City, Mo., \$9,204. Roy Murray is City Engr.

Pittsburg, Kan.—Contract for constructing concrete sidewalks was awarded to J. W. Cooley. Three contractors entered bids. Cooley's bid was as follows: For 4-in. concrete sidewalks, 9 cts. per sq. ft.; for 5-in. concrete sidewalks, 11 cts. per sq. ft.; for 6-in. concrete crossings, 13 cts. per sq. ft. The bids of A. J. Robson for the same were 9 cts., 10 cts. and 13½ cts., respectively. S. A. Clements' bid was 11, 15 and 20 cts. on the same work. This was above the estimate of the city engineer. Bid

for concrete bridge on 10th St. was rejected.

Baltimore, Md.—By City Paving Comm. to P. Flanigan & Sons of Baltimore, for Contract 121, paving Hillen, East and Gold Sts. at following bid: 7,200 sq. yds. sheet asphalt, 1½-in. top, 1½-in. binder, 6-in. concrete base, \$1.45; 5,250 sq. yds. on 5-in. concrete base, \$1.36; 200 sq. yds. vitr. block pavt., 5-in. concrete base, cement fill, mortar cushion, \$1.70, and 260 sq. yds. on 6-in. concrete base, cement fill, mortar cushion, \$1.81; 520 sq. yds. granite block pavt., 6-in. concrete base, asphalt fill, mortar cushion, \$3.27, and 2,000 sq. yds. cement fill, mortar cushion, \$3.17; 1,120 sq. yds. sheet asphalt, 1½-in. top, 1½-in. binder, 6-in. concrete base (railway area), \$1.45; 430 sq. yds. vitr. block gutters and crossings, 5-in. concrete base, cement fill, mortar cushion, \$1.70; 4,600 lin. ft. armored concrete curb and circles in place, 50 cts.; 3,200 lin. ft. old stone curb and circles redressed and reset, 30 cts.; 1,960 cu. yds. grading, city area, 40 cts.; 700 cu. yds. grading, railway area, 60 cts.

Baltimore, Md.—P. Flanigan & Sons, with bid of \$1.32 a sq. yd. for sheet asphalt on 6-in. concrete base, were lowest bidders for paving contracts on Rosedale Ave. from Edmondson Ave. to Arunah Ave. and Arunah Ave. westward.

Duluth, Minn.—After having been held up for more than a month, resolution awarding contract for paving of Colorado St. to J. Johnson was adopted at regular Council meeting Sept. 7th. Mr. Johnson's bid was \$9,750.45. The resolution awarding John H. Brigham contract to pave Eighth and Ninth Sts. in Fond du Lac was laid over until next week, as it involves more than \$1,000.

Eveleth, Minn.—The Lawrence-McCann Co. will lay two and a half blocks of creosoted block paving on Adams Ave., from end of present paving north to crest of hill. The price for work will be same as that paid for paving on Monroe and Hayes Sts. and work will be considered part of that contract. Approximate cost of the paving will be \$7,000.

Eveleth, Minn.—City has obtained exceptionally low price for sidewalk work this season and it was decided to have next year's work done under present contract. Accordingly the Eveleth Construction Co., Kilbride & Forristel, was instructed to lay walks on the following streets: Adams Ave., both sides, \$2,100; Harrison St., both sides, \$3,600; A Ave., west side, \$598; Summit Ave., south side, \$992; McKinley Ave., east side, \$557; Monroe St., south side, \$507; Kimberly Ave., both sides, \$1,408; Elba Ave., both sides, \$3,600; Fayal Ave., both sides, \$3,600; total, \$17,694.50.

St. Paul, Minn.—To Barrett Mfg. Co. for furnishing 19,300 lbs. of pitch-filler for paving the extension of roadway on North Smith Ave.

St. Paul, Minn.—To Republic Creosoting Co., Indianapolis, Ind., for furnishing 18,670.6 sq. yds. 3½-in. creosoted yellow pine blocks to be used in paving North Smith Ave., from College Ave. to High Bridge.

Chillicothe, Mo.—City Council has awarded contract for paving of Elm St. from Ninth to Elmdale road to George W. Barkwell.

Fornell, Mo.—Contract for Main St. paving job has been let to Murray Construction Co. of Sikeston. The price is \$35,269.

Belleville, N. J.—Resolutions awarding contract for paving Overlook Ave. with asphalt block, to Glenfield Construction Co., and Belmont Ave., in Silver Lake section of town, with bitulithic, to the Standard Bitulithic Co., have been introduced and ordered filed in town clerk's office for 10 days before adoption. Bid of former company was \$2.85 per sq. yd. for laying pavement and 45 cts. per cu. yd. for excavating. The Standard Bitulithic Co.'s bid was \$2.16 per sq. yd. for laying pavement and 42 cts. per cu. yd. for excavating. Because complete tabulation of bids for paving Heckle St. had not been completed, award of contract for that street was deferred.

Irvington, N. J.—For construction of 11,250 lin. ft. bluestone curbs on Lyons Ave. to Millipone & Scaniello, Newark, N. J., at 60½ cts. for laying new curb and 89 for corners per set. Total, \$7,293.25.

Newark, N. J.—To Glenfield Construction Co. contract for paving of North 12th St. from Abington to Chester Aves. with asphalt. The price is \$7,023.

Newark, N. J.—Contracts for paving

Washington Ave., Nutley, reconstructing Central Ave., East Orange, and building warden's home at Essex County Penitentiary, and sale of three bond issues aggregating \$615,000 were authorized Sept. 9 by Board of Freeholders. Sale of county bonds, \$270,000 and \$200,000, respectively, for road improvements and \$145,000 for additions to county penitentiary was made by board to Robert Winthrop & Co., of New York, for \$623,671.50. Contracts for the improvement of Central Ave. and construction of Washington Ave. were awarded to Northern Construction Co. and Standard Bitulithic Co., respectively. The contract for 6-in. concrete base covered with 2½ ins. of Bitulithic pavement for Washington Ave. was awarded on bid of 35 cts. per cu. yd. for excavating work and \$2.03 per sq. yd. for bitulithic, the total contract amounting to \$76,489. The Central Ave. work calls for 2½-in. bitulithic resurfacing. The contract necessitates an outlay of \$56,975.

Quogue, N. Y.—For construction of Quogue Rd. from Quogue to Riverhead, to the Peconic Construction Co., Riverhead, at \$11,000.

Rochester, N. Y.—At meeting of Board of Contract Sept. 7 following contracts were awarded: Elliott St. asphalt pavement, Rochester Vulcanite Co., \$16,349; Snyder St. grading and walks, John J. Regan, \$2,475.50.

Rome, N. Y.—At special meeting of Board of Public Works, Sept. 7, there was only one bid for paving of approaches to East Dominick St. bridge over Black River Canal, and that was from Warren Bros. Co., for their bitulithic paving, bid being for \$1,550 without a guarantee and 1,650 with 5 years' guarantee. Bid was accepted and referred to City Attorney A. J. O'Connor, who was present, and work will be commenced at once.

Walnut Cove, N. C.—At special meeting of Town Commissioners on Sept. 7 a contract was awarded to Geo. R. Martin, of Salisbury, for laying of cement sidewalks on both sides of Main St., from First St. to corner of Fifth.

Gallion, O.—For construction of 43,000 sq. yds. brick and asphalt paving on concrete foundation and 18,000 cu. yds. excavation contracts were awarded to four companies on four different streets as follows: Brooks Const. Co., Ft. Wayne, Ind. (brick), \$40,095.45; H. P. Streiche & Co., Toledo, O. (asphalt), \$23,205.57; C. E. Williams, Grand Rapids, Mich. (asphalt), \$12,761.84, and Geo. B. Herring & Sons (brick), Mansfield, O., \$27,641.82. A. F. Unckrich is Director of Public Service.

Massillon, O.—McGary & Stowe, Akron contractors, have been awarded contract for sum of \$544 to pave Thorn St., between Lincoln Ave. and Prospect St. Only other bidder was Urban & Clementz, of this city, who asked \$558. McGary & Stowe now have contract to pave State St.

York, Pa.—For paving with asphalt, North Newberry, West Poplar and West Philadelphia Sts., to General Supply & Construction Co., York, at \$21,275.

Seattle, Wash.—For grading, curbing, etc., of Mary St. to D. J. McLean at \$8,335; for paving East Columbia St. to F. McLellan at \$1,946, and for grading, curbing, etc., Stroud Ave., to Coluccio & Bressi, at \$10,422.92.

Superior, Wis.—Five contracts for improvement of streets between rails at South Superior, Belknap St., Central Park and East End were awarded at meeting of board of public works held Sept. 3. Five contracts call for an expenditure of \$38,114.90. The successful bidders were: Tower Ave., 58th to 64th Sts., S. A. Riches, \$1,914.70; Belknap St., Clough to G Aves., Russell Construction Co., \$12,873.35; West 17th, G to L Aves., John Doffer, \$4,298.52; West 5th St., L to Cadotte Aves., Russell Construction Co., \$8,721.08, and West 5th, Cadotte to Stinson, E. Johnson, \$10,306.25. Work will start at once. It is expected that all of the jobs will be completed within six weeks. Following are unsuccessful bids submitted to board: South Tower Ave.—L. E. Baum, \$2,128.15; Magnus Peterson, \$1,988.76; Belknap St.—John Doffer, \$13,556.74; S. A. Riches, \$13,483.37; Magnus Peterson, \$13,216.79; West 7th St.—L. E. Baum, \$4,976.54; S. A. Riches, \$4,371.57; Magnus Peterson, \$4,490.12; Russell Construction Co., \$4,360.91; West 5th St., L Ave. to Platt line—L. E. Baum, \$10,237.82; Edward Johnson, \$8,874.80; S. A. Riches, \$9,287.92; Magnus Peterson, \$8,930.08; West 5th St., Platt line to Stinson Ave. L. E. Baum, \$11,402.75; Magnus Peterson, \$10,671.75; S. A. Riches, \$9,521.75.

SEWERAGE

Marysville, Cal.—City Clerk Niebling has been authorized to advertise for sealed proposals for furnishing labor and material necessary for proposed sewer and street improvements for which money was voted. Notice will call for separate bids on each of five subdivisions of work. It is possible city council may itself perform one or two subdivisions of work. Hour of opening bids was fixed at 8 p. m. on Sept. 16.

Pasadena, Cal.—Resolution has been adopted for construction of sewer along Prospect Blvd. John Beyer is Supt. of Streets.

Stockton, Cal.—City council has brought up ordinance authorizing purchase of five acres of land from John Capurro, which is located on San Joaquin River, just north of Santa Fe Railroad bridge. The ordinance was placed on its final passage and went through unanimously. The property is to be used for a sanitary sewage disposal plant to consist of system of septic tanks, pumping works and machinery for disposal of sewage of city. The purchase price was \$1,250, which is considered reasonable price, considering location of site.

Pasadena, Cal.—Resolution of intention 3795 for sewer on Prospect Blvd. and Prospect terrace has been adopted.

Bridgeport, Conn.—Committee will recommend to Board of Aldermen construction of sewer in Laurel Ave. from Brooklawn Ave., 300 ft., northerly. Of sewer in Bostwick Ave. from Morris St. 125 ft. south. In Edna Ave., extension of the present sewer 75 ft. In Rockton Ave., sewer 400 ft. westerly from Wayne St. The committee also recommended that overflow from Yellow Mill sewer at foot of Sherman St. be extended 50 or more feet into deep water.

Stamford, Conn.—At adjourned meeting of Common Council bids for construction of surface-water drainage system from lower Grove St. through private property to Cardinal Pl., thence beneath the railroad embankment, and through railroad property to the Canal, were opened. Eight bids were submitted, and there was considerable difference between highest and lowest. Two or three of lower bidders were closely grouped, with comparatively little difference in their respective bids. Among these were Daly & Merritt of Port Chester, Frank Palmer of Stamford and Frazer & Burchense of New York. City Engineer Nash's estimate of cost of work was \$26,500. Lowest bidder's figure will probably be somewhat lower than that.

Newark, Del.—Council has approved of plans submitted by sewer commission for extension of sewer 667 ft. along Depot Rd. This was done with understanding, however, that competent engineer be secured to look after the work.

Miami, Fla.—Sewer and street bonds in sum of \$100,000 have been sold to William R. Compton Co., St. Louis, Mo., for \$101,377.77.

Athens, Ga.—City is planning to install new septic tank for city sewerage.

Alton, Ill.—The long projected sewer in west end of city will be realized, Mayor Beall expects, and work will be started sometime next spring.

Clinton, Ia.—Bids for two big sewer jobs will be opened by the Clinton City Council at its regular September meeting. These sewer jobs are: Fourth Ward, sewers, 4.3 miles; Fifth Ward, sewers, 2 miles. Council at recent meeting fixed night of September 14 as time for opening bids for construction of new sewers.

Elliott, Ia.—Resolution is being considered for various sewer improvements. Contemplated work consists of 2,501 ft. of 15-in. sewer pipe, 1,364 ft. 12-in. sewer pipe, 1,059 ft. 10-in. sewer pipe, 5,044 ft. 8-in. sewer pipe, 7,230 ft. 6-in. sewer pipe, 173 lin. ft. manholes, 24 manhole rings and covers and 16 flush hole covers. E. D. Hully is Town Clerk. Theo. S. De Lay is Civil Engineer.

Duluth, Minn.—It has been decided that sanitary sewer be constructed in Wabasha St. from Maxwell Ave. to Kolstad Ave. and in Kolstad Ave. to a point 85 ft. north of Wabasha alley, at estimated cost of \$2,174.54.

St. Joseph, Mo.—A committee from Brookdale district has met with City Engineer Huff and Rudolph Helm of Board of Public Works to discuss proposed drainage basin which is provided for by \$50,000 issue of bonds. J. V. Dewey, who headed committee, is of opinion that sewer can be built, which

will care for drainage just as well or better than proposed reservoir.

Newark, N. J.—Board has decided to build combination sanitary and storm sewer in Sandford Ave. and adjacent streets in Vailsburgh section at cost of about \$30,000.

Plainfield, N. J.—The \$35,000 worth of borough sewer bonds recently purchased by Plainfield Trust Co., have been approved by New York bonding attorneys. Bonds were handed over to Plainfield Trust Co. by borough clerk, C. M. Doliver.

Westfield, N. J.—Bids for northeast main sewer have been received from G. Villa, Foster Callahan, E. W. Chamberlain, M. Rinaldo and C. A. Peterson. These bids were referred to sewer committee.

Woodbridge, N. J.—At special meeting Sept. 7 the township committee passed ordinance providing for construction of School St. sewer on third and final reading. Final reading was also given ordinances for sewers in Second, Fourth and Turner Sts. and clerk was ordered to advertise for bids for construction of same.

Middletown, N. Y.—Construction of sanitary sewers on upper section of Lake Ave. and on Oliver Ave. is being considered.

Rensselaer, N. Y.—City clerk has been instructed to advertise for bids for placing of 600 ft. of 12-in. sewer in Aiken Ave.; 1,225 ft. of 10-in. sewer in Aiken Ave. from Columbia St. to New York Central Railroad track; 450 ft. of 8-in. sewer in Spruce St., and 900 ft. of 10-in. sewer in Ring St. This work is to come under contract No. 1. Contract No. 2 calls for 320 ft. of 12-in. sewer for 4th St.; 800 ft. of 12-in. sewer for Forbes Ave.; 850 ft. of 10-in. sewer for Birch St.; 850 ft. 10-in. sewer for 9th St.; 850 ft. 10-in. sewer for 5th St., and 370 ft. of 8-in. sewer for 7th St. Contract No. 3 calls for a 15-in. sewer from Barnett Shoddy Mill through Forbes Rd. to Central Ave. and thence to river.

Utica, N. Y.—Plans and specifications have been filed by city engineer for sewer in Kellogg Ave. This proposal is also to be received at 2.30 p. m., September 15.

Greensboro, N. C.—Authorities of Guilford College have asked city to share expense of installing system of sewerage purification.

Winston-Salem, N. C.—Chairman L. F. Owen, of sewer committee, has presented to board of aldermen plans for construction of sewer lines in parts of city where such convenience is demanded, and board, upon motion of Alderman O'Brien, ordered that arrangements be made for construction of work planned at once, provided finance committee can arrange to finance proposition. It was indicated that committee would be able to meet its obligation in matter and to guarantee as little delay as possible. Order for work to be done passed its first reading. Cost of extension of sewer system in accordance with plans of the committee has been approximated at about ten to fifteen hundred dollars. One of lines calls for sewer lines on White St., 10th St. for two blocks, Slate St., Chestnut St., 11th St., and short line on Patterson Ave.; the other line calls for sewer lines on following streets in West Salem: Green, Bank, Broad, one block on Academy, one block on Poplar, 1,300 ft. on West St., and Marshall St.

Mount Vernon, O.—Resolution has been adopted for improvement of Norton St. by construction of sanitary sewer.

Niles, O.—Ordinance has been passed to issue bonds in sum of \$2,500 to pay part of cost and expense of constructing sewer in Sewer District No. 3, in North Crandon Ave. between the city limits and Robbins Ave.

Niles, O.—Ordinance has been passed determining to proceed with improvement in District No. 3 in North Crandon Ave. from city limits to Robbins Ave., by constructing sanitary sewer.

Toledo, O.—Ordinances have been adopted for construction of sewers in various streets.

Urbana, O.—Special meeting of City Council was held Sept. 7 to give West Water st. storm sewer ordinance second reading in order to have legislation all passed so that storm sewer can be constructed as soon as funds are available.

Marlow, Okla.—City of Marlow sold, subject to issue carrying at election of Sept. 16, bonds for installing of up-to-date sewer system for city to extent of \$15,000. Bonds were sold to highest open bidder at auction, R. J. Edwards, of Oklahoma City, being successful bidder at \$102.50. There were six bidders. W.

L. Benham, of the Benham Engineering Co., of Oklahoma City, was awarded contract to do the work. Marlow expects to have system in operation by Dec. 15, 1915.

Eugene, Ore.—All that portion of city sewer system that flows into river in northeastern part of city will be turned into main trunk sewer on 6th Ave. this fall, according to plans of Mayor W. A. Bell.

Erie, Pa.—Ordinance has been adopted providing for construction of a 9-in. diameter lateral sanitary sewer in south side of Front St., in the City of Erie, Pa., extending from the center of Sassafras St. west 600 ft., more or less, together with necessary house connections.

Harrisburg, Pa.—Bids for construction of sewers in Fifth St. between Schuylkill and Mahantongo Sts., in alley north of Mahantongo from Lexington 50 ft. eastward, and in Green St. from Granito to near Maclay have been opened by Commissioner W. H. Lynch. Bidders on respective jobs were Stucker Bros., \$885, \$92 and \$3,140; William H. Opperman, \$849, \$89 and \$3,179; Henry Opperman, \$883, \$110 and \$3,193; G. W. Ensign, Inc., \$937, \$129.70 and \$3,267; H. W. Johnson, \$889 and \$70.

Jersey Shore, Pa.—Plans for sanitary sewer in Fourth Ward, as presented to Councils by Borough Engineer C. E. McCollough, were adopted by Councilmen and committee was appointed to go to Harrisburg to petition State Board of Health for necessary permit to construct the sewer.

Sharon, Pa.—Council has taken first step to bond issue of \$185,000 for purpose of constructing sanitary sewer and disposal plant, in accordance with decree of state board of health, when ordinance was passed declaring intention of solons if money is forthcoming.

Woonsocket, R. I.—Resolution appropriating \$6,000 for surface water drain on Carrington Ave. and Maple St. has been sent to finance committee.

Richmond, Va.—Installation of sewers in East End to extent of \$50,000 will be considered by administrative board. City Engineer Bolling has brought in report to board naming streets needing improvements. Board will hold conference for purpose of selecting streets so that bids may be advertised for.

Richmond, Va.—Contract to install sewers in Scott's Addition has been deferred by administrative board because of lack of \$43,000 needed for proposed improvements. The city engineer was instructed to estimate cost of placing sewer on Leigh St., between Boulevard and McTavish St., which section is in imperative need of sewer relief.

CONTRACTS AWARDED.

San Francisco, Cal.—Board of Works has awarded contract for completing North Point main sewer by constructing Islais Creek section from Mount Vernon Ave. to Oneida St. to F. Rolandi for \$29,554.

Swampscott, Mass.—At meeting of Water and Sewer Commissioners bids for construction of Melzard brook culvert and water pipes in Crest Rd. and Fairview Ave. and sewer in Suffolk Ave. were opened. For construction of Melzard brook culvert bids were: Mayo Construction Co. of Lynn, \$748.85; Felice D'Agness, \$952; James T. Lyons, \$682.50; M. McDonough Co., \$502.50. Contract was awarded to M. McDonough Co. For Suffolk Ave. sewer bids were: Abram French, \$522.30; James T. Lyons, \$487. The contract was awarded to James T. Lyons. For water trenches in Crest Rd. and Fairview Ave., the bids were: Crest Rd., M. McDonough Co., \$250; Abram French, \$256.30; James T. Lyons, \$232.50. Fairview Ave.: M. McDonough Co., \$230; Abram French, \$218.50; James T. Lyons, \$172.50. Both contracts were awarded to James T. Lyons.

Eveleth, Minn.—The Lawrence-McCann Co.'s storm sewer contracts were extended to include storm sewer on Douglas Ave. to take care of water from Hayes, Jackson, Jones and Pierce Sts. Estimate on this job is \$10,400. On Jones St. storm sewer will be laid east of Adams Ave. at cost of \$4,500 and water service pipes will be laid on Jones, Jackson and Pierce Sts. east of Adams Ave. at a cost of \$2,150.

Butte, Mont.—To A. J. Nordstrom contract was awarded for a sewer and sidewalk in district No. 194.

Belleville, N. J.—Contract for building storm water sewer on Overlook Ave. has been awarded Peter Scola, of this city.

Passaic, N. J.—The Union Building & Construction Co. has been awarded contract for laying sanitary sewer in Oak St. and Gregory Ave., and F. J. Macley for sanitary sewer in Main Ave.

Perth Amboy, N. J.—A contract for constructing storm sewer to drain Lehigh Valley railroad property and thereby prevent flooding of portion of State St., has been awarded to Carl Poulsen and Jens W. Rohr at meeting of Board of Aldermen.

New York, N. Y.—Contracts for sewer construction, to Casperine & De Blasio, 357 East 116th St., New York, at \$4,457, First Ave. sewer, and to H. E. Fox Construction Co., 81 East 125th St., New York, at \$32,040, for outlet sewer at Dyckman St. and Hudson River, including construction of a submerged outlet and screening chamber.

Winston-Salem, N. C.—Carrying out instructions of board of aldermen at their last meeting sewer committee has secured bids on proposed sewer extensions, and have let the contracts. The instruction to contractors is to be prepared to begin work in new districts following final action of board. The construction of mains in new sewer district in West Salem has been awarded to L. B. Brickenstein, contract price being approximately \$5,500. It provides sewer lines on Green, Bank and Broad Sts.; one block on Academy St.; one block on Poplar; 1,300 ft. on West St. and Marshall St.

Sellersville, Pa.—For construction of approximately 22,640 ft. of 8, 10 and 12-in. sewers has been awarded to Dwyer & Co., 1524 Chestnut St., Philadelphia, at \$20,620. Other bids were: Cantrell Construction Co., Philadelphia, \$25,970; G. W. Ensign, Harrisburg, \$26,690; Antonio Celentino, Trenton, N. J., \$27,830; J. M. Hamilton, Jr., Oakmont, \$28,525; James Ferry & Sons, Baltimore, Md., \$29,625.

Sellersville, Pa.—Following are total of 3 lowest bids received Aug. 30 for constructing sanitary sewer system, from plans of Bascom & Sieger, of Allentown: Dwyer & Co., 1524 Chestnut St., Philadelphia, Pa., \$20,621; Cantrell Constr. Co., 21st and Sedgley Aves., Philadelphia, \$25,971; G. W. Ensign, Inc., Room 18, Harrisburg National Bank Bldg., Harrisburg, \$26,698. Itemized bids of Dwyer & Co., lowest bidder: 11,035 ft. 8-in. sewer, not over 6 ft. deep, 47c.; 8,895 ft. 8-in. sewer, between 6 and 8 ft. deep, 55 cts.; 753 ft. 8-in. sewer, between 8 and 10 ft. deep, 97 cts.; 492 ft. 10-in. sewer, between 6 and 8 ft. deep, 59 cts.; 366 ft. 10-in. sewer, between 8 and 10 ft. deep, 77 cts.; 250 ft. 12-in. sewer, not over 6 ft. deep, 45 cts.; 185 ft. 12-in. sewer, between 6 and 8 ft. deep, 55 cts.; 260 ft. 12-in. sewer, between 8 and 10 ft. deep, \$1.03; 220 ft. 12-in. sewer, between 10 and 12 ft. deep, \$1.89; 35 manholes, not over 6 ft. deep, \$30; 12 manholes, between 6 and 8 ft. deep, \$32; 5 manholes, between 8 and 10 ft. deep, \$40; 1 manhole, between 10 and 12 ft. deep, \$50; 20 lampholes (Type A), not over 6 ft. deep, \$16; 10 lampholes (Type A), between 6 and 8 ft. deep, \$20; 1 lamphole (Type A), between 8 and 10 ft. deep, \$25; lampholes (Type A), between 10 and 12 ft. deep, \$27; lampholes (Type B), not over 6 ft. deep, \$7; lampholes (Type B), between 6 and 8 ft. deep, \$8; lampholes (Type B), between 8 and 10 ft. deep, \$9; lampholes (Type B), between 10 and 12 ft. deep, \$9; 450 4-in. Y branches and plugs, 40 cts.; 6-in. Y branches and plugs, 50 cts.; inverted siphon complete, \$1,400; 1,300 cu. yds. rock excavation, not over 6 ft. deep, \$1.10; 1,400 cu. yds. rock excavation, between 6 and 8 ft. deep, \$1.65; 250 cu. yds. rock excavation, between 8 and 10 ft. deep, \$2.50; 50 cu. yds. rock excavation, between 10 and 12 ft. deep, \$3.

West Chester, Pa.—For construction of sewage disposal plant and 1,500 ft. c.-l. force mains, to M. & T. E. Farrell, West Chester, at \$6,290. Other bids were: Manwaring & Cummins, Philadelphia, \$6,997; Lewis & Roth, Philadelphia, \$7,688; Kelley-McFeeley Co., Camden, N. J., \$6,638.

Wilkesburg, Pa.—For construction of storm and sanitary sewers in portions of Wood St., to A. V. Purnell, 507 Jackson St., Allegheny, at \$38,890.

Williamsport, Pa.—Councilman Minor has offered a resolution awarding contract for house sewer in High St. between North Grier and Cemetery Sts. to Busch & Stewart at their bid of \$679.61.

WATER SUPPLY

Leslie, Ark.—City Council is said to have selected J. B. McCrary Co., Atlanta, Ga., to supervise construction of water

works to cost \$30,500. It is also said that bonds will be sold and material purchased by City Commissioners around Sept. 15.

San Rafael, Cal.—Election has resulted by vote of 3,692 to 1,090 in favor of issuing water system bonds in sum of \$3,000,000 in Marin Municipal Water District. C. S. Whitaker is District Secretary.

San Rafael, Cal.—Citizens of Marin County have voted to issue \$3,000,000 water district bonds for purchase of plants of North Coast Water Co. and Marin Water & Power Co.

Tracy, Ia.—Bids will be received at 8 p. m., Sept. 20, for 200,000-gallon concrete reservoir and water main extensions. T. F. Stoakes is Town Clerk and C. P. Chase, of Clinton, Ia., is Engineer.

Attica, Kan.—E. T. Archer & Co., Kansas City, Mo., are preparing plans for water works and electric light plant at cost of \$30,000. J. C. McCaddon is City Clerk.

Spearville, Kan.—Election has resulted in favor of issuing water works bonds in sum of \$25,000.

Pittsfield, Mass.—Finance committee has voted to recommend to City Council adoption of order to provide \$10,000 for water extensions.

Alpena, Mich.—On evening of September 16, water board will meet to listen to reading of report of State Board of Health as to conditions of Alpena's water supply system, and recommending installation of an efficient chlorinating plant at pumping station.

St. Cloud, Minn.—After carefully weighing the two petitions and investigating sentiments of persons interested the Commission has ordered city engineer to prepare plans and specifications for extension of water mains on 6th and 7th Aves. south between 8th and 10th Sts.

Bayard, Neb.—Election has resulted in favor of issuing water works bonds in sum of \$12,500.

Rogers, Neb.—Election has resulted in favor of issuing water coupon bonds to the amount of \$4,000. Geo. E. Gless is Village Clerk.

Rahway, N. J.—Further steps have been taken at meeting of Board of Water Commissioners to improve municipal water supply by installing a Wallace & Tiernan chemical water sterilizer at cost of \$485.

Albany, N. Y.—Ordinance has been introduced authorizing issue of \$100,000 in bonds to pay for extension of water works system.

Hudson Falls, N. Y.—Question of issuing water system bonds in sum of \$270,000 will probably be submitted to the voters at fall election.

Lockport, N. Y.—Favorable action was taken by water board Sept. 2 on resolution of Aldermen McCoy and Rooney adopted by common council recently for extension of water pipe in East Ave., from head of Lovers' Lane to south side of street, work to be done before street is paved. Board directed Supt. White to make necessary extension and also to connect pipe in North Adam St. with the pipe in Clinton St., a distance of about 60 ft.

Madrid, N. Y.—Bonds in sum of \$22,000 will be sold Sept. 14 by E. B. Watson, Town Clk., for construction of water works.

Oneida, N. Y.—The soft water proposition has entered into final stage, report of Engineer Fred J. Wagner having been accepted by Commissioners. Plan 2-a, calling for expenditure of approximately \$479,000, will undoubtedly be brought up for final decision at special election this fall. A supply from Florence creek, 20 miles away, will insure public more than three times volume of water required at present. In addition Commission claims water supply will be unexcelled in purity and softness. In recommending plan 2-a Commission presents tabulated estimate of cost of installing system as follows: Right of way damages, \$27,320.90; pipe line, including valves and meters, \$328,945.54; dam, \$55,000; service reservoir, \$21,188.00; chlorinator, \$2,000, making a total of \$456,177.79. A contingency fund of 5 per cent totals \$21,722.75, to which would be added a 5 per cent outlay for general supervision and inspection, amounting to \$22,808.89, raising the total appropriation to \$479,000.

Lumberton, N. C.—Bonds in sum of \$45,000 will be sold, proceeds to be used for improving light and water plant, putting in filtration plant and erecting additional school building.

Wilson, N. C.—Firm of Anderson Christy has been selected by Board of

Aldermen of Wilson as engineer for water, electric light and sewerage improvements, for which bonds were recently voted. The work will be quite extensive.

Mount Blanchard, O.—Plans are said to be approved by State Board of Health, Columbus, for water supply system.

Salem, O.—Three ordinances have been passed by City Council at their regular session, East Main St., assessing ordinance, one setting aside sufficient sum of money from \$12,000 bond issue to pay city's share on certain improvements, and other to provide for employment of expert hydraulic engineer to look over water situation in this city.

Grove, Okla.—Town council has passed ordinance authorizing issuance of water works extension bonds in sum of \$10,000.

Baker, Ore.—Because of growth of city, and constant danger of water shortage, Mayor C. L. Palmer, addressing city commissioners, has asserted that it is duty of commissioners to again submit to people of Baker matter of extending present water system to include all possible sources of supply.

Milwaukee, Ore.—Election has resulted in favor of issuing water system bonds in sum of \$25,000.

Contesville, Pa.—At meeting of council Sept. 6 it was decided to continue work on Rock Run Water Works. Borough received decision of state water supply commission which refused to revoke its permit for construction of public utility, but suggested that it would approve plans for Buck Run, if council and people could get together. While work is proceeding on new plant it is understood that Alexander Potter, a civil engineer, has been directed to make plans of Buck Run proposition. Townspeople figure that it would be easy task to substitute Buck Run for Rock Run and bring about more harmonious condition of local affairs. Council has instructed engineer to advertise for bids on high pressure system for Rock Run plant.

Franklin, Pa.—Plans are being considered for improvement of water supply.

Aberdeen, S. D.—About 500 water meters will shortly be purchased by City Commissioners.

Gayville, S. D.—Bids will be received at office of town clerk up to 3 p. m., Sept. 21, for furnishing all tools, labor and material for construction of new waterworks system: Section 1—Distributing system consists of 1,152 ft. of 6-in. cast iron pipe, 3,128 ft. 4-in. cast iron pipe, 12 fire hydrants, 5 4-in. gate valves and boxes, 1 6-in. gate valve and box. Section 2—Tower and tank, consisting of 50,000 gal. steel tank on a 110-in. tower. Section 3—Brick and tile engine house. Section 4—Engine driven deep well pump and fittings. E. A. Aaseth is town clerk.

Norfolk, Va.—Council will consider resolution recommended by Board of Control for appropriation of \$100,000 for repair of two dams and spillway at Lake Taylor and repair of clear water basin at city water works.

Ridgefield, Wash.—Plans are being prepared by Gilbert & Hall, Portland, Ore., for water works system to include 500-gal. pump, 200,000-gal. reservoir and wood pipe \$100,000. Work will be voted on this fall. J. W. Blackburn is Town Clerk.

Seattle, Wash.—Council has decided to lay water mains on 13th Ave. and also in Wyoming and 14th Aves. N. W. A. H. Dimock is City Engr.

Seattle, Wash.—Bids were opened as follows for water mains on East 54th St.: G. Argenti & Co., \$1,582.10; Granger, Hassen & Co., \$1,553.70; D. Parisi Co., \$1,582.50; City Contracting Co., \$1,633.15; Henry G. Niblett, \$1,654; N. Florito & Bros., \$1,570.10; Thomas Scalso, \$1,528.80; E. Arnaldo & Co., \$1,815.80; Fred Carlson, \$1,646.50.

CONTRACTS AWARDED.

Pasadena, Cal.—Commission has approved contract with American Cast Iron Pipe Co. for about \$10,000 of cast iron pipe. Some of this pipe will be laid on Glenarm St.

Macon, Ga.—By Water Comrs. for erection of 180,000-gal. stand pipe to Schofield Iron Works of Macon, at \$5,100.

Charlton, Ia.—For constructing water works contracts 1 to 5, as follows: Contract 1 to Maley & Kelley, Kansas City, Mo., contract consisting of: 5,000 cu. yds. stripping soil from dam site, 25 cts.; 5,000 cu. yds. place soil from spoil banks on embankment, 30 cts.; 1½ acres seed-

ing, \$50; 50,000 cu. yds. earth excav. moved embankment, 28 cts.; 27,000 board ft. tongue and grooved sheet piling, \$90; 880 cu. yds. reinforced concrete in curtain wall, \$15; 700 cu. yds. riprap, \$2,785; gate house complete, \$1,225; 200 ft. 18-in. c-l. pipe outlet and supply pipe, \$2.25; 150 ft. 12-in. intake pipes, \$1.50; 400 ft. 24-in. vitr. pipe outlet pipes, \$1.50; manhole A complete, \$180; manhole B complete, \$75; total, \$38,085. Contract 2, pump house and filter plant complete to J. W. Turner Improv. Co., Des Moines, at \$11,000. Contract 3 to Pittsburgh Filter Co., Pittsburgh, Pa., filter equipment complete, liquid chlorine, \$4,637; power-driven blower complete for air wash, \$630; hypochlorite plant (sub. for liquid chlorine), \$100. Contract 4, engines, motors and pumps has not yet been awarded. Contract 5 to J. W. Turner Improv. Co. as follows: 9,240 ft. 10-in. Class C pipe, 327 tons, per ton, \$25.45; 4,000 ft. 10-in. Class B pipe, 127.5 tons, per ton, \$25.45; 100 ft. 4-in. Class B pipe, 1.08 tons, per ton, \$27.45; 5 ft. 10-in. valves, ea., \$27.50; 5 ft. 4-in. valves, ea., \$8; 10 valve boxes, ea., \$4; 8,000 lbs. special castings, 3 cts.; 5 1-in. poppet air valves, \$20; 5 hydrants, ea., \$26; 12,800 ft. 10-in. pipe to lay, 48 cts.; 100 ft. 4-in. pipe to lay, 35 cts.; 5 setting hydrants, \$5; total, \$18,699.

Boston, Mass.—To Standard Cast Iron Pipe & Foundry Co., Bristol, Pa., at \$12,633, for furnishing water pipe.

Lakefield, Minn.—To Des Moines Bridge & Iron Works contract for additions and improvements to water works plant. Earle D. Jackson is consulting engineer, St. Paul.

Milligan, Neb.—For water works system to F. B. Bentley, Geneva, Neb.

Centerville, N. Y.—To Abney Harper Co., Inc., Newburgh, at \$8,277, for laying water mains, and to R. D. Wood & Co., Philadelphia, Pa., at \$10,883, for furnishing water mains and specials.

Bluffton, O.—To Theodore G. Scheild, Lima, at \$15,523, for making improvements to water system.

Maumee, O.—By Board of Trustees of Public Affairs to T. C. Brooks & Sons, Jackson, Mich., at \$49,753.28, for water works system.

Minneapolis, O.—By Bd. Pub. Affairs to W. C. Kerchner Co., Dayton, for constructing water main extensions on Senett St. and West Side, at \$9,626.

Silverton, O.—To W. D. Megrue, Pleasant Ridge, Cincinnati, for laying 6-in. water main in various streets.

Wellington, O.—For construction of dam and other water works improvements at Herrick Gulch to Gaugle & Harbaugh, of Akron at \$28,000.

South Bethlehem, Pa.—Borough Council has awarded contract for laying 5,500 ft. of water main from present source of supply in mountains near Hellertown, to Sloyer Springs, to Bilger & Co., Hellertown, at its bid of 49 cts. per ft.

Seattle, Wash.—For laying water mains on Bradner Place to N. Florito & Bros. at \$1,363.20, and on 37th Ave. N. E. to City Contracting Co., at \$8,912.70.

LIGHTING AND POWER

Gadsden, Ala.—Mayor W. G. Bellenger has recommended to City Council that city build municipal light plant and municipal auditorium.

Pasadena, Cal.—Several measures carrying step farther project of changing cluster ornamental lights in center part of city to single standard hydrogen lamps have been given a reading. It is planned, as already frequently outlined, to add six inches to height of present posts and put single lamp on top.

Pasadena, Cal.—Resolutions of intention for new lighting system in central part of city have been introduced and read for first time.

Santa Ana, Cal.—City Trustees have practically decided to install system of ornamental cluster lights on Main and Fourth Sts.

Sausalito, Cal.—Sausalito's Town Trustees on Sept. 1 let a contract for installation of new street lighting system of electrolights to extend along Water St. through business district for a distance of fifteen blocks. Contract price is \$6,000. The Trustees also let number of contracts for building new sea walls along Water St.

Lewes, Del.—A committee has been appointed in Milton consisting of Messrs. C. A. Virden, J. L. Black, Sr., C. B. Johnson, Charles G. Waples and F. B. Carey to make inquiries as to cost of installing public lighting system and to make report on matter early this week.

Summit, Ga.—Election will be held Sept. 14 to vote on question of issuing electric light bonds in sum of \$5,000.

Sterling, Ill.—City Council is now seriously contemplating installing more boulevard lights in this city.

Huntington, Ind.—Favorable action by board of works on four petitions for ornamental lights practically brings that part of problem of arranging post lighting system to a close. It has been under consideration for months, but as first considered by board system was only fraction of that since sanction. No other city in Indiana will have, proportionately, a more extensive ornamental light system, according to members of city administration. Petitions granted are for: Market St. from Cherry to LaFontaine; West State from Cherry to West Market; East Franklin from Warren to Briant; East Matilda from Jefferson to Byron.

Portland, Ind.—City Engineer Clayton has been instructed to prepare estimate of expense for erection of an addition to power plant, 10x20 ft. Building to be used for housing transformers. He will make his report at next meeting of Council.

Clinton, Ia.—The boulevard light system is to be extended down Fifth Ave. from Second to First St. during present year.

Emporia, Kan.—Improvement of lighting system on streets and "white way" on Commercial St. is being discussed.

Lima, O.—Service director has been ordered to employ electrical engineer to prepare plans, specifications and estimates on boulevard lighting system in business district and municipal plant to furnish electricity for system.

Topeka, Kan.—State executive council has ordered erection of four white way posts in addition to those in original plans for state house lighting system. New posts will be installed to conform with general lighting plan on Kansas Ave. and other streets.

Nicholasville, Ky.—Nicholasville will soon have beautiful white way, extending from Interurban depot to county jail on Main St. An expert electrician and contractor has drawn plans and estimated cost of installing fixtures and doing necessary work which will amount to about \$1,500.

White Castle, La.—Election has resulted in favor of issuing water works and electric light plant bonds in sum of \$25,000.

Kalamazoo, Mich.—City will vote upon question of bonding for \$975,000 for municipal gas plant and for another bond issue of \$350,000 for enlarging municipal lighting plant.

Saginaw, Mich.—North side property owners and business men have instituted progressive move, looking to installation of "white way" system of street lighting, all along West Genesee Ave., from bridge to Michigan, and probably to Fayette, a block west of Michigan. A subscription list method of financing scheme has been adopted.

Thief River Falls, Minn.—Special election will be held Sept. 30 to vote on bond issue of \$38,000 for purpose of improving and extending municipal electric light plant.

Butte, Mont.—D. J. Reardon, electrical contractor of Butte, was declared to be successful bidder for contract to install Butte's new lighting system by the City Council Sept. 1. Successful bid was \$31,755. Other bids were as follows: Standard Engineering Co., of Helena, \$28,300; J. R. Silver, Jr., \$33,743.60; Crabbgan and Frank, \$40,000; Mayer Electric Co., \$40,306.66; Butte Electric Supply Co., \$40,737.37.

Lamberton, N. C.—Bonds will be sold for improving light plant.

Lima, O.—Electors of Lima may be asked in election this fall to say whether they approve of issue of bonds to build boulevard lighting system in business district and to erect municipal lighting plant to provide electricity for such a lighting system. The light committee of city council will recommend that city employ engineer to draw plans and specifications and prepare estimates on boulevard system and lighting plant. In July appropriation \$150 was set aside for this purpose, but no subsequent action was taken.

Marietta, O.—After careful investigation of matter at hand, lighting committee of chamber of commerce has compiled report in which it advocates purchase of current from the Kanawha Traction & Electric Co., for period of at least five years.

Newark, O.—Petitions will be filed for initiative on proposition to bond city for \$30,000 for repairing old municipal electric light plant. Total last fall was 6,432 and as 10 per cent of total vote must be secured in signatures it will require 643, it being claimed that they have in excess of that number now on petitions which are in circulation. A majority in favor of proposition to issue the bonds will carry it at election in November.

Eugene, Ore.—An auxiliary electric plant operated by steam will be built by Eugene water board this fall, to be used in case of accident to hydro-electric plant near Walterville, on McKenzie River, which furnishes light and power for city. Estimated cost of plant is between \$50,000 and \$60,000. Board is now asking for bids for installation of this plant, and after bids are in, which will be within a few weeks, contract will be let, and it is hoped to complete plant by first of year. It will be located at sub-station and transforming plant in Eugene.

South Bethlehem, Pa.—Chairman Seiple of lamp committee has reported having received two bids for street lighting contract. They were from Halcyon Electric Light & Power Co. and Lehigh Navigation Electric Co. The bids, which were complicated in detail, were referred to lamp and finance committees for tabulation, committees to procure necessary data and aid from electrical experts, on motion of Messrs. Donahoe and Seiple. The Halcyon Company, which at present supplies the current, bid as follows: Luminous arc lamps—\$72 per lamp for a five-year contract, or \$66 per lamp for a ten-year contract; Mazda incandescent lamps—\$16 per year per lamp for either five or ten-year contracts. Under terms of the ten-year bid, the borough would save \$1,217 annually. The foregoing bid was according to specifications. The company also presented proposition as follows: For 60-cycle single phase 2,200 electric energy need for the operation of street arc and incandescent lamps for either a five or ten-year period the following quotations: 1½ cts. per K. W. H. less 10 per cent. discount for payment by the 15th of the following month; net price 1 3-5 cts. per K. W. H.; proposition No. 2—50 cts. per K. W. of demand and in addition the following rates per K. W. H.: for the first 5,000 K. W. H. per month, 2 cts. per K. W. H.; for the next 95,000 K. W. H. per month, 1 ct. per K. W. H.; all in excess of 100,000 K. W. H. per month 5 cts. per K. W. H. The Lehigh Navigation Electric Co. submitted following bid: For 127 arc and 82 incandescent lamps there is a need of 50 K. W.; this multiplied by 4,000 hours equals 20,000 K. W. H. per annum; at the rate given in the contract your cost for power would be \$3,480 or 1.7 cts. per K. W. H. Together with necessary labor, supplies, interest and depreciation by navigation company's bid total cost per annum would be approximately \$7,110. The company also shows that by accepting this bid the borough would save approximately \$3,500 annually or \$17,500 in five years in comparison with rates paid at present.

Williamsport, Pa.—Resolution calling for advertising for bids for lighting city for ten years has been introduced by Mayor Stabler. It calls for ten days limit and was passed unanimously.

Murfreesboro, Tenn.—Board of election commissioners of Rutherford County will call election to be held on Tuesday, Oct. 5, for purpose of determining whether citizens of Murfreesboro will accept or reject ordinance providing for acquisition and operation of electric light plant by commissioners of city.

Dallas, Tex.—At regular meeting of City Council of Highland Park the issue of \$10,000 of 20-year bonds, voted Aug. 21, with which to install system of ornamental street lighting, was sold to Galveston firm at par, and light committee was instructed to close contract with Dallas Electric Co. for putting in the lights.

Richmond, Va.—Request has been made to finance committee for appropriation of \$20,000 to light city with electricity instead of gas.

CONTRACTS AWARDED.

Sausalito, Cal.—By Board of Town Trustees for installation of electroliners, covering distance of about one mile, to Pacific Fire Extinguisher Co. of San Francisco, at \$2,717. Plans call for erection of 65 one-lamp compressed steel standard electroliners. Leonard L. Hohl is town engineer.

Magnolia, Minn.—To W. T. Dean of Magnolia to construct electric light plant here.

Nehalem, Ore.—To West Coast El. Co. of Tillamook, Ore., contract for installing street lighting system here.

Seattle, Wash.—For furnishing 250-horsepower motor to Allis-Chalmers Co. at \$1,015.

Madison, Wis.—To Industrial Foundry Co., St. Johns, Mich., contract for installing proposed ornamental lighting system and furnishing cable. Amount of bid was \$9,875.

FIRE EQUIPMENT

Auburn, Cal.—Election will be held Sept. 14 to authorize \$5,000 bond issue for auto fire truck and \$2,000 for fire alarm system.

San Jose, Cal.—Action to place San Jose fire department upon more efficient basis was taken by Board of Police and Fire Commissioners. Bids will be advertised for on 3,000 ft. of 2½-in. hose and for 200 ft. more or less, of 1½-in. hose. Bid on 100 ft. of 1-in. chemical hose was awarded to Republic Rubber Co. at 40 cts. a ft.

Stratford, Conn.—Board of fire commissioners has asked that \$1,000 be appropriated to purchase new hose for department's use, also \$500 for hose tower, \$1,000 for small car to be used in cases of emergency and for small fires, for addition of 25 new hydrants. They also recommended that \$3,000 be appropriated to install fire alarm system.

Alton, Ill.—Installation of electric alarm system is being discussed by City Council.

Streator, Ill.—Question of purchasing motor apparatus for this city has been referred to purchasing committee by city council to bring in definite report at next meeting.

Hickman, Ky.—An election will be held in Hickman Monday, Sept. 20, for purpose of determining desire of voters on issuing bonds amounting to sum of \$7,500, due ten years from date, for purpose of purchasing motor chemical and pumping engine, ladders, hose and other fire protection apparatus.

Fall River, Mass.—It is estimated that it will cost \$85,000 to completely motorize Fall River fire department. Tractors are to be used for three ladder trucks; chassis will be used for two bodies of hose wagons. Eight new pieces of apparatus are to be purchased, exclusive of three tractors and two chassis. Under tentative plans one new aerial truck will be purchased, also tractors for other trucks now horse-drawn. Five motor combination pumping engines are to replace all present steam fire engines. Combination hose and chemical wagons will be bought to replace Nos. 3 and 6.

Hillsdale, Mich.—Citizens will vote on question of motorizing fire department.

Eveleth, Minn.—Council has discussed purchase of auto truck for fire department. Money for purchase of truck is in fire fund from 1915 levy and it is probable that council will decide on kind of apparatus best suited to city's need and advertise for bids.

Boonton, N. J.—Town council has passed ordinance which provides for issuance of fire department bonds in sum of \$9,000.

Garwood, N. J.—Council has ordered 300 ft. of hose bought for fire department.

Linden, N. J.—Erection of new fire house is being considered.

Paterson, N. J.—Bids for hose were opened Sept. 3 being as follows: C. C. Fire Hose Co., Underwriters' brand, 47 cts. per ft.; Bilateral Fire Hose Co., \$1.90 cts. and 80 cts. per ft. for three grades; B. F. Goodrich Co., 52 cts. per ft.; United Globe Rubber Co., 48 cts. per ft.; Empire Rubber Co., 52½ cts. per ft.; Boston Rubber Co., 56 cts. per ft.; Manchester Rubber Co., 51½ cts. per ft.; Jones Packing Co., 55 cts. per ft. Contract has not yet been awarded.

Spring Lake, N. J.—A resolution authorizing bond issue of \$9,000 with which to pay for new automobile fire engine has been passed on its final reading and next step is to advertise for bids for sale of bonds which will be 20-year bonds carrying interest at 5 per cent.

West Orange, N. J.—An ordinance has been passed providing for bond issue of \$15,000 to pay for two motor fire vehicles which will be delivered on Sept. 25.

Wharton, N. J.—Purchase of motor combination chemical and hose wagon is contemplated.

Auburn, N. Y.—Bonds were ordered at meeting of common council Sept. 7 for payment of new motor hook and ladder

truck, which will be delivered in 90 days. The cost will be \$5,580, \$1,000 of which was provided for in annual budget. The remainder will be raised in bonds of \$580 and \$1,000 each.

Lima, O.—Council has ordered legislation, upon recommendation of safety committee, for submission of issue of \$34,000 for two new fire stations, one to be located south of Chicago and Erie tracks and other in East Lima. Proceeds of bonds, it is estimated, will be sufficient for purchase of sites, erection of buildings and complete equipment for both houses.

Niles, O.—Installation of better fire alarm system is urged.

Coopersburg, Pa.—At meeting of Borough Council of Coopersburg ordinance became effective looking to construction and erection of building for purpose of housing fire company and apparatus, providing rooms for Borough Council meetings and other borough usages, to be constructed at cost of \$9,000. Question will now be put before voters of borough at November election.

Lewistown, Pa.—Funds are being raised by Brooklyn Fire Company for purchase of new auto truck.

Pen Argyl, Pa.—Council has approved of \$15,000 bond issue for installation of fire alarm system.

Southampton, Pa.—Money is being collected for purpose of motorizing part of present equipment.

Woonsocket, R. I.—Fire committee's recommendation of the purchase of a \$700 auto truck has been sent to finance committee.

Chattanooga, Tenn.—Fire commissioner will shortly advertise for bids for furnishing motor apparatus. W. Toomey is chief.

El Paso, Tex.—Chairman of the fire committee has recommended the motorization of fire department.

CONTRACTS AWARDED.

Muskegon Heights, Mich.—To Manhattan Rubber Co., Chicago office, for furnishing 700 ft. of hose.

Plainfield, N. J.—Contract for furnishing automobile combination hose and chemical apparatus, according to specifications advertised some months ago, was awarded to International Motor Truck Co. of this city by Common Council Sept. 7. The price to be paid is \$3,842.

Racine, Wis.—The American-La France Fire Engine Co., Elmira, N. Y., was awarded contract for furnishing power hook and ladder truck to city of Racine at meeting of Common Council Sept. 7.

BRIDGES

Oroville, Cal.—Supervisor Evans, of Butte County, has been given permission to proceed with construction of 14 small bridges in his district, cost of each not to exceed \$500.

Redding, Cal.—This city has voted overwhelmingly in favor of \$5,000 bonds for contribution to county in helping to build a \$20,000 steel bridge across Sacramento River at this place.

Santa Barbara, Cal.—A proposition to issue bonds for \$350,000 to build bridges connecting various portions of state highway system already constructed in county was approved, but proposals to issue bonds to build hospital and a detention home were defeated.

Stockton, Cal.—Petition signed by business men and others has been filed with board of supervisors asking for bridge at Burneyville Ferry, crossing Stanislaus River at Riverbank.

Bridgeport, Conn.—Seven bids have been submitted for construction of new Stratford Ave. bridge before commissioners in charge of construction, but two of bids were for type of bascule only, so that really only five complete bids were submitted, one more than at previous meeting. All bids total very much more than \$400,000, and are not very much lower than first bids submitted. The Penn Bridge Co., of Beaver Falls, Pa., submitted one bid for Strauss roller lift of \$110,000, and Strobel Steel Construction Co., of Chicago, submitted bid for Roll type of bascule for \$95,800. The H. P. Converse & Co., of Boston, submitted total bid of \$439,851 for bid if Schurzer bascule is used, and of \$478,529 with Strauss type. But their bid for Strauss bascule is \$137,923, which item is considerable above that of Penn Bridge Co. The Empire Construction Co., of New York, submitted total bid for construction of bridge, with Strauss bascule, of \$441,344.85, and if Scherzer

type is desired bid is \$466,080.15, to which should be added \$27,485 for approaches. The individual item for Strauss bascule is \$109,264, which is lower than individual bid of Penn Bridge Co. The bid of Holbrook, Cabot & Rollins, of Boston, for completion of bridge is \$319,000, without bascule. This allows commission to select either of bids given by Penn Bridge Co. or Strobel Construction Co. The Bang Construction Co., of Cumberland, Md., submitted total bid on type A of \$305,891, without bascule, and \$31,396 for approaches and \$27,672 for removal of old structure. For type B bridge they submitted total bid of \$242,891 without bascule, with same items for approaches and removal of old structure. Toole & Sunderlin, of this city, submitted detail bid, which showed total with Scherzer type of bascule of \$346,927, and with Strauss type of \$473,094. To this is added approaches of \$31,543. They have bids also for different designs of Scherzer bascule and also added figures for B type of bridge.

Brazil, Ind.—County Commissioners have received bids of contracts for construction of bridges and roads, but no contracts were awarded. The following bids were received: Muir's Lake Bridge Floor—S. A. Owen, \$249. Lena Bridge, 60-ft. Concrete—Campbell & Hawkins, \$1,449; Skelton, \$1,392; Wm. Rupert, \$1,467; McCullough & Landine, \$1,378; Van Fassen, \$1,370. Pogues Run, 15 ft. Flat Top—Campbell & Hawkins, \$798; Wm. Rupert, \$837. Belks, 30-ft. Girder Concrete—Skelton, \$972; Wm. Rupert, \$967; McCullough & Landine, \$890. Stigler Bridge—Skelton, \$917; Wm. Rupert, \$987; McCullough & Landine, \$980. Tiefert Bridge, 7-ft. Flat Top—Wm. Rupert, \$537. (West) Steuermwald Bridge—Wm. Rupert, \$793; McCullough & Landine, \$1,400. McIntyre Bridge, New Abutment—McCullough & Landine, \$720.

Fort Wayne, Ind.—An appropriation of \$7,000 will be asked by County Commissioners for 4th St. bridge. No bids were received for bridge under present plans on \$7,000 appropriation made last session, so appropriation will be asked for again and plans for bridge altered so as to bring cost of it within that limit.

Indianapolis, Ind.—County council has adopted resolution that may lead to construction of new bridge over Fall Creek, at Meridian St. and new bridge over Fall Creek at Shriver Ave. Resolution says county tax levy shall be made large enough to provide for bond issue of \$75,000 for Meridian St. bridge and \$50,000 for Shriver Ave. bridge, provided city of Indianapolis shall appropriate like amounts to complete the work. It is provided also that construction of bridges shall be under supervision and control of County Commissioners and county engineer.

Richmond, Ind.—The committee of expert bridge engineers has recommended construction of entirely new bridge at Main St.

Carlisle, Ky.—A new bridge may be erected by Nicholas County across Licking River at Lower Blue Lick Springs to take place of present large suspension bridge, which is reported in bad condition. The fiscal court has ordered plans and specifications for new bridge to be made. Present bridge is one of largest suspension bridges in this part of state.

Joplin, Mo.—Election has been decided in favor of issuing 27 \$500 bonds for building of viaduct on North Main St.

Merrimack, N. H.—Appropriation of \$4,000 is being considered for erection of bridge across Pennichuck brook on state highway between Nashua and Manchester.

Bloomington, N. J.—Fred G. Sloan of Bloomington, chairman of road committee of Passaic County Board of Freeholders, has said that board had passed resolution to widen bridge on back road, as Paterson and Hamburg turnpike from Union Sq. toward Smith's Mills is known locally. Bridge crosses a small creek and is erected at angle to highway. The freeholders will have structure widened so it will carry 30-ft. roadway and also have walks for pedestrians at each side.

Keyport, N. J.—Bids were opened by Board of Freeholders at Freehold Sept. 8 for construction of new bridge which is to be in form of Strauss bascule trunion over Matawan creek on road leading from West Keyport to South Amboy, but awarding of contract was deferred until Sept. 16. A number of bids were received and were as follows: F. W. Schiers, Jr., & Co., of New York—\$36,750, with an additional amount of \$1,475 if an overhead type of chain

barrier is substituted for a roadway gate. F. R. Long-W. G. Broadhurst Co., Hackensack, \$34,320, and \$1,900 additional. Killey-McFeeley Co., Camden—\$47,890, and \$1,000 additional. Lackawanna Bridge Co., Buffalo, N. Y.—\$39,670, and \$2,000 additional. Owen J. Melee, Long Branch, \$39,900 and \$2,000 additional. C. A. Neld Co., Pittsburgh, \$44,230, and \$1,550 additional. Spalding Construction Co., Suffield, Conn.—\$39,000 and \$2,000 additional. Lewis J. Seiling, Red Bank—\$36,870 and \$870 additional. Penn. Bridge Co., Beaver Falls, Pa.—\$37,340 and \$1,500 additional.

New Brunswick, N. J.—Bids will be received until 2 p. m., Sept. 20, 1915, by County Collector of Middlesex County, at his office in New Brunswick, N. J., for purchase of \$69,000 convertible bridge bonds of denomination of \$1,000 each. Edward Burt is County Collector.

New Brunswick, N. J.—Freeholder Alfred T. Kerr has submitted resolution accepting plans drawn by County Engineer Fox for bridge over Brace Ave., Perth Amboy, and authorized Clerk Asher W. Bissett to advertise for bids on same. Director Gebhardt presented resolution awarded contract for erection of concrete and steel bridge over Ambrose brook, Metlar's lane, Piscataway township, to Wilson Concrete Co., of Plainfield, for \$1,175. Bids on this work were received as follows: John F. McGovern, New Brunswick, \$1,585; Goldson W. Smalley, Dunellen, \$1,177; Abraham Jellin, New Brunswick, \$1,357; Chandler and Hoth, New York city, \$1,790.

Binghamton, N. Y.—The Board of Contract and Supply has approved action of Common Council, allowing Commissioner of Public Works to repair Ross Park walls and bridges by contract without asking for competitive bids, and work will be undertaken at once.

Binghamton, N. Y.—Brokerage firm of Farson, Son & Co., of New York, was high bidder on issue of \$30,000 city bridge improvement bonds when proposals were opened Sept. 3 at meeting of board of estimate.

Groveland, N. Y.—At joint meeting of town boards of Groveland and Sparta it was voted to spend \$4,500 in building three concrete bridges between Groveland Station and macadam road on west side of the Genesee Valley known as Dansville-Mt. Morris State Highway.

Kingston, N. Y.—Town bonds of town of Shawangunk, amounting to \$25,000, issued to pay construction of new reinforced concrete bridge across Walkkill river at Walkkill, have been sold at auction at town clerk's at Walkkill. A large number of bids was received. Highest bidder was George B. Gibbons & Co., of New York city, who took entire lot, paying premium of \$280.

Wilmington, N. C.—The special bridge committee and executive committee of Wilmington Chamber of Commerce has decided unanimously to appear before Board of County Commissioners and ask that special election be called in New Hanover on question of bridging Cape Fear River, in conformity with agreement entered into several years ago with Brunswick County.

Middletown, O.—County commissioners have decided to build temporary bridge at Exello across the canal. Plans are being prepared by Engineer Hammerle.

Harrisburg, Pa.—Bids will be received until 10 a. m., Sept. 30, for reconstruction of about 20 bridges, of steel concrete and reinforced concrete. R. J. Cunningham is State Highway Commissioner.

Johnstown, Pa.—Engineer G. A. Flink, of Harrisburg, will prepare plans for Horner St. bridge and superintend its construction, work to start as early as possible this fall, and he will receive for his services sum not to exceed 5 per cent commission on \$45,000, or \$2,250.

Johnstown, Pa.—Plans are being considered for Horner St. bridge.

Woonsocket, R. I.—Indications are that work may be commenced this fall upon construction of three concrete bridges in this city. Board of Aldermen by vote of 3 to 2, accepted plans presented by City Engineer Frank H. Mills for two new bridges at Hamlet, one spanning trench and larger one crossing Blackstone River, and for Fairmount St. bridge spanning Blackstone near plant of Woonsocket Rubber Co.'s Alice Mill. These plans were drawn by Mr. Mills in collaboration with J. R. Worcester & Co., Boston, consulting engineers. Board has instructed City En-

gineer Mills to advertise for bids upon accepted plans.

Denison, Tex.—Voters are in favor of proposed bond election for \$50,000 to be used in erection of viaduct over Katy and Houston and Texas Central railway tracks.

CONTRACTS AWARDED.

Kennett, Cal.—By vote of 161 to 10 Kennett has decided to bond city for \$5,000 to raise money to help Shasta County build steel bridge across Sacramento River opposite depot. The sum of \$4,000 will be given toward bridge. Sum of \$1,000 will be used in building approaches and paying for cost of special election. County has let contract for building bridge to Portland Bridge Co. for \$15,976, with understanding that Kennett will furnish steel at cost of \$1,750. The net cost of bridge to county will be \$13,726. Bridge will be 700 ft. long.

Bridgeport, Conn.—The superstructure for new Stratford Ave. bridge is to be built by Holbrook, Cabot and Rollins, of Boston, Mass., for their bid figure of \$352,000, while the Empire Construction Co., of New York, will do the bascule work (Strauss type) for \$109,264.70. Bids as compiled by Engineer Greiner and Whitman were as follows: Bridge approaches exclusive of bascule spans: H. P. Converse Co., \$372,238; Empire Construction Co., \$387,081.75; Holbrook, Cabot and Rollins, \$352,000; Vang Construction Co., \$434,851; Toole and Sunderlin, \$376,817. Bascule span alone: H. P. Converse and Co., Scherzer, \$99,246; Empire Construction Co., Strauss, \$106,264; Toole and Sunderlin, Scherzer, \$104,228; Penn. Bridge Co., Strauss, \$110,000; Stroebel Steel Construction Co., Rall, \$59,000. Combination bridge and approaches complete with bascule: H. P. Converse and Co., Scherzer, \$471,483; Empire Construction Co., Strauss, \$469,199.70; Toole and Sunderlin, Scherzer, \$481,045; Stroebel Steel Construction Co., Rall, \$447,800; Penn. Bridge Co., Strauss, \$462,000.

Hartford City, Ind.—J. E. Clark was the successful bidder, Sept. 6, on three bridge jobs, let by county commissioners. These bridges were Newbauer, \$1,612.70; the Atkinson, No. 2, \$356, and the County Line bridge, \$468. The Newbauer bridge is one over Lick Creek, where Walnut St. crosses the creek.

Shelbyville, Ind.—Haymond & Howard has secured contract for reflooring of Cutstring bridge on county line north of Edinburg, their bid being \$2,530. Five other bids were received by Commissioners of Shelby and Johnson counties, who met in joint session to award contract.

St. Joseph, Mo.—Contracts for bridge repairs and concrete culverts were awarded Sept. 6 by county court and highway engineer as follows: Concrete culvert over Beck's branch, north of Easton, on the Easton-Clarksdale Rd., to the Topeka Bridge and Iron Co., \$2,475. Concrete culvert at Canter hill, southeast of Rushville, on the Rushville-DeKalb Rd., to C. O. Gillis, \$856.25. Concrete culvert at Valley Chapel, in the Ben F. Stuart neighborhood, southwest of DeKalb, to Dennis Regan, \$650. Two concrete culverts south of the Woodbine school, over the west branch of the Adenoid, to Perry Robertson, \$380. Concrete culvert at Emmett Marker's, in extreme northeast corner of the county, on the intercounty seat highway between St. Joseph and Clarksdale, to Perry Robertson, \$396. Repairs to bridge over Maiden creek, at New Harmony church, on the east and west road north of Gower, to the Middleton Bridge Co., \$220. Repairs to bridge over Maiden creek at Grier Brothers', on the east and west road southeast of Easton, to the St. Joseph Structural Steel Co., \$336. Repairs to bridge over Cologne creek, at the James Deets place, southeast of Garrettsburg, on the Garrettsburg-Agency Rd., to G. W. Barnes, \$275. Repairs to bridge over Muddy creek, at the Dan Kessel's place, in the northeast corner of the county, to the St. Joseph Structural Steel Co., \$467. Repairs to bridge over Bee creek, at Housman's, on the east and west road, northwest of Faucett, to G. W. Barnes, \$425.

St. Paul, Neb.—Contract for new state aid bridge to be built across Loup river southeast of this city has been let to the Central States Bridge Co. of Indianapolis, Indiana, who had lowest bid, \$27,936. Bids for a similar bridge at same place were called for last year, and lowest bid at that time was something over \$63,000. The new bridge

will be a four-span construction, with a 16-ft. roadway.

Vestal, N. Y.—Town board of town of Vestal has awarded contract for construction of new bridge to span Tracy Creek, two miles below village of Vestal, to Owego Concrete Co., of Owego. Contract was awarded on bid of \$2,250. New structure is to be of concrete arch pattern and of 60-ft. span.

Wilson, N. C.—For single leaf plate girder highway Scherzer rolling lift bridge with clear opening of 40-ft. bridge to be built over outfall canal to Champion Bridge Co., Wilmington, O.

Mount Gililand, O.—By County Comrs. for constructing Beatty Bridge to E. M. Scully of Columbus. C. O. Higgins is Aud.

Terrell, Tex.—Road Commissioners of this district have awarded contract for bridge and culvert work to be done in district to W. W. Fuller for \$26,814.

MISCELLANEOUS

Marysville, Cal.—In accordance with pre-election promise, three Marysville banks, the Rideout Bank, the Decker-Jewett Co. Bank, and the Northern California Bank of Savgs, have purchased at par the \$18,000 worth of municipal bonds voted by citizens at bond election held Aug. 25. Resolution accepting bid of banks was given unanimous vote of city council.

Bridgeport, Conn.—Site is being considered for proposed ice plant.

Marianna, Fla.—The advisory election held Sept. 6 in this city to ascertain wishes of people in matter of establishing municipal ice plant resulted in vote of 169 for proposition to 41 against. City Council will at their next regular meeting call regular bond election to decide whether city will issue bonds in sum of \$17,000 for building of proposed ice plant.

Moline, Ill.—Citizens are considering installing incinerator. A. Stouffer is Commissioner.

Bloomfield, Ind.—The Greene County Council has voted appropriation of \$25,000 to build soldiers' monument which will be erected at southwest corner of public square in Bloomfield.

Huntington, Ind.—Committee has recommended addition to jail building.

Salina, Kan.—Installation of incinerator is being considered by citizens.

Lexington, Ky.—Decision has been reached to submit to taxpayers proposition to appropriate \$10,000 out of 1916 tax levy for purpose of erecting county workhouse.

Hagerstown, Md.—Purchase of pulmotor is being discussed.

Boston, Mass.—Contract was signed Sept. 2 by which city purchases six Buick roadsters of 1916 model to replace worn-out machines used by district chiefs of fire department. Contract price is \$4,578, or average of \$763 per car, city being allowed \$250 for each car returned. The cars will be delivered without top or windshield.

Springfield, Mass.—Plans are ready for construction of incinerator at South End yards to cost about \$8,000.

Duluth, Minn.—City will construct incinerator to cost about \$3,360.

Duluth, Minn.—Installation of reduction system for garbage is being considered.

Duluth, Minn.—City improvement bonds bearing 5 per cent. will be sold over the counter within next week. At the next Council meeting Commissioner Voss will introduce resolution ordering a \$100,000 bond issue, in \$1,000 lots, to be sold direct to investors at par.

St. Louis, Mo.—Construction of municipal dock costing \$250,000 is recommended in final report of waterways committee recently appointed by Mayor. The report further suggests enactment of ordinances which would encourage revival of river traffic.

Camden, N. J.—Another important step toward improvement of Camden's water front has been taken by Harbor Commission in adopting resolution declaring its intention of constructing pier at head of 28th St. This will be in connection with proposed dredging of river front by government, engineers being in readiness to submit report probably by next week. City Engineer Farnham will be called on for estimated cost.

Elizabeth, N. J.—Finance and charity committees of city council will recommend a \$40,000 appropriation for almshouse improvement.

New Brunswick, N. J.—Three bids on chassis for combination police patrol

and ambulance wagon have been received by City Commission and referred to Commissioner Houghton, who will take them up in conference with city attorney and chief of police. Contract will likely be awarded on Sept. 14. The advertisement limited the cost of chassis to \$1,125, and two bids were received at that figure, one from Hoagland-Thayer, Inc., of Newark, and the other from the Central Garage and Sales Co., of this city. The third bid was submitted by the Star Auto Co., of this city, on a chassis to be built by F. M. Ramhorst at cost of \$1,085. The chassis is to be guaranteed for five years and is consigned to the care of the Star Auto Co.

Spring Lake, N. J.—Council has received bids for construction of three jetties along beach front as follows: George Woolley, \$10 per ft.; Jesse Howland, \$9.80; Smith & Cooney, \$8.90, and Thomas Proctor, \$12.

Newark, N. J.—Specifications for new garbage contract for this city will be recommended shortly to Board of Works for adoption.

Cranston, R. I.—Two blocks of city of Cranston bonds, amounting to \$75,000, were sold by city council to N. W. Harris & Co., of Boston, whose bid was \$93,533 for the entire issues.

Johnson City, Tenn.—Johnson City will vote on proposition to issue \$75,000 in bonds for purpose of building court house and market house. There has been great need of court for city for many years.

Dallas, Tex.—Two motorcycles will be purchased for city water department.

Grafton, W. Va.—Ordinance is being prepared for submission to City Commission at its next regular session for sale of bonds in amount of \$15,000, which were recently favorably voted upon by people of this city.

Sheboygan, Wis.—Plans have been revised from time to time until now figures for city hall complete are below \$100,000, according to the bids submitted Monday, Labor Day, and in all probability there will be no delay in its construction.

CONTRACTS AWARDED.

Atlantic City, N. J.—On recommendation of Director Thompson, the city commissioners, Sept. 2, awarded contract for construction of extension of jetty at foot of Tennessee Ave. to Atlantic Construction & Supply Co. on their bid of \$13,427.20. Bids were also received for construction of two jetties of same type each 350 ft. long at Iowa and Boston Aves. Bids were received from the Atlantic Construction & Supply Co., Edward L. Bader and from John W. Ingersoll. The contract was awarded to the latter.

New York City, N. Y.—The Public Service Commission for First District during week has opened bids for supply of trap rock or hard lime stone ballast to be used on the tracks of new subway system. On Aug. 18 the Commission opened bids for three portions of this ballast and awarded contract for one portion but readvertised for two portions. Bids submitted for the two portions under this readvertisement were as follows: Portion A—About 243,000 cu. yds. of either trap rock or hard lime stone: Upper Hudson Stone Co., \$228,010; Haverstraw Crushed Stone Co., \$250,240. Portion B—About 32,500 cu. yds. of 3-in. ballast, either trap rock, hard lime stone or field stone: Haverstraw Crushed Stone Co., \$26,325; Upper Hudson Stone Co., \$27,625. The Public Service Commission for First District has awarded contract for construction of duct line in 44th St., Manhattan, for use in connection with Queensboro subway to E. C. Moore of No. 154 Nassau St., the lowest bidder, for \$34,005.90. The duct line begins in Lexington Ave. at 44th St. and extends easterly under 44th St. to First Ave., southerly under First Ave. to 42d St. and easterly under 42d St. to a connection with the shaft of the Queensboro subway between First Ave. and the East River.

Hillsboro, Tex.—By City Council contract to J. W. Stokes, Waxahachie, at \$4,760, for constructing a new garbage crematory.

Burlington, Vt.—D. F. S. Hathaway was awarded contract to take care of garbage in city for coming year at recommendation of city board of health. His bid was \$2,375. Other bidders were F. H. McCale, \$3,000; N. C. Florence, \$2,700; E. J. Viens, \$2,700; W. S. Lee, \$2,500.

TOO LATE FOR CLASSIFICATION

BIDS ASKED FOR

STATE	CITY	REC'D UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
STREETS AND ROADS				
Miss., Meridian.....	11 a.m., Sept. 20..	Curbing several streets.....	R. L. Blanks, City Clk.	
Neb., Grand Island....	8 p.m., Sept. 22..	940 yds. concrete paving, 3,686 yds. vertical fibre brick and curbing.....	H. E. Clifford, City Clk.	
Pa., Darby.....	8 p.m., Sept. 22..	Constructing 14,000 sq. ft. cement sidewalk.....	A. F. Damon, Jr., Boro. Engr.	
Ore., Tillamook.....	Sept. 23..	Paving with concrete and constructing curbs and gutters.....	John Aschin, City Rec.	
Minn., St. Paul.....	10.30 a.m., Sept. 27..	Grading and curbing; paving with asphaltic concrete.....	Aug. Hohenstein, Pur. Agt.	
N. J., Newark.....	3.15 p.m., Sept. 30..	3,300 yds. bitulithic, 1,600 ft. stone curb.....	M. R. Sherrerd, Ch. Engr.	
Tenn., Tazewell.....	11 a.m., Oct. 8..	Grading and macadamizing 103 miles county road.....	C. R. Fulton, Surrogate.	
SEWERAGE				
Minn., St. Paul.....	10.30 a.m., Sept. 27..	Constructing Hazel Park sanitary sewer system.....	Aug. Hohenstein, Pur. Agt.	
WATER SUPPLY				
Wis., Janesville.....	2 p.m., Sept. 27..	Laying water mains in several streets.....	City Clerk.	
FIRE EQUIPMENT.				
Pa., Sharon.....	noon, Sept. 30..	500 or 1,000 ft. hose.....	C. E. Lartz, Boro. Secy.	
Tex., Houston.....	noon, Oct. 2..	75-foot aerial, 65-foot water tower, first size steamer, two combined pumping engines, one combination chemical, all motor or electrically driven and 7,000 ft. hose.....	L. P. Scarborough, City Pur. Agt.	
R. I., Providence....	2.15 p.m., Oct. 4..	Building police station.....	K. C. Richmond, Architect, 10 Weybosset St.	
BRIDGES				
R. I., Providence....	2.15 p.m., Sept. 27..	Steel work of highway bridge over Moshassack river....	City Engineer.	
Pa., Lewistown.....	Oct. 8..	Bridge over creek.....	County Commissioners.	
MISCELLANEOUS				
Pa., Lansdowne.....	8 p.m., Sept. 22..	698 ft. of armor plate expansion joint, 1,920 ft. filler, 2,305 yds. reinforcement and 550 bbls. cement.....	J. W. Davis, Secy.	
Minn., St. Paul.....	10.30 a.m., Sept. 27..	Paving materials including 3,685 bbls. Portland cement, 1,900 cu. yds. trap rock, 1,100 cu. yds. sand.....	Aug. Hohenstein, Pur. Agt.	

STREETS AND ROADS

Stockton, Cal.—T. A. Nelson and John D. Maxey, speaking for group of property owners, have asked Board of Supervisors to repair and otherwise improve 3½ miles of Durham Ferry road, beginning at what is known as Ten Mile corner and extending to Sharp's lane.

Bartow, Fla.—At meeting of County Commissioners of Polk County the location of system of highways, to be built with proceeds of proposed bond issue of about a million dollars, in the event of people of county authorize same, was finally mapped out.

West Palm Beach, Fla.—Punctually on stroke of noon Sept. 7 the chairman of Board of County Commissioners declared all bids closed, and board at once proceeded to open bids for \$800,000 worth of road bonds. The successful bid was awarded to Hoeher, Cummings & Padden and Sidney Spitzer & Co., two firms of Toledo, O., who put in joint bid.

Peoria, Ill.—Steps are being taken to improve the highways in Peoria County.

Albion, Ind.—Bonds for road south of Albion have been sold by County Treasurer to C. C. Shipp, of Indianapolis, for \$20,000.

La Porte, Ind.—Bids will be received until 10 a. m., Sept. 19, for two bond issues of \$22,000 and \$7,000 for highway improvements. Joseph Johanni is Treasurer of La Porte County.

South Bend, Ind.—An appropriation of \$750 for construction of road signs to be erected at intersection of main highways in St. Joseph County has been made by County Council.

Salina, Kan.—Park St. will be curbed, guttered and paved from Ninth to the Missouri Pacific tracks. College Ave. to Park will receive the same. Mulberry is to be curbed and guttered from Santa Fe to Second; State from College to Missouri Pacific tracks and on south side on to Olive; Chicago from Walnut to State, and Walnut from College to Missouri Pacific tracks.

Monroe, La.—Police Jury has passed ordinance which provides for combination road and drainage district to dig canal and build road southeast from Monroe through Lafourche swamp, road to connect with road from Winnsboro through Boeuff River section of Richland parish. Dirt from canal will be thrown up and made into road that will be above water level during rainy season. After roadway has been thoroughly packed it will be given surface of

gravel. Plans for construction of canal road were drawn by State Highway Engineer W. E. Atkinson. Total cost will be about \$65,000, and State will contribute \$15,000.

Bangor, Me.—State Highway Commission has decided to provide sufficient money for completion of mile of road in south end of town of Dedham on direct route to Bar Harbor and to have work done at once.

Columbus, Miss.—Taxpayers of fourth supervising district of Lowndes County are to expend \$100,000 in improving their roads, and when work is completed district, which includes some of finest alfalfa land in south, will have splendid system of public highway.

Meridian, Miss.—A petition has been filed asking for paving of 24th Ave., between Maple and Chestnut Sts., in Marion Park.

Meridian, Miss.—City of Meridian proposes to do great deal of its own work in street building line, especially in repairing paving, and with this purpose in view has contracted with Meyer Bros. for road roller, cost of same being \$2,200.

Hastings, Neb.—Movement has been launched by good roads committee of Chamber of Commerce to complete development of boulevard through Hastings on line of the O-L-D highway. Projects are pending for extension of Second St. paving to Elm and Baltimore Aves.

Hillside, N. J.—Preliminary steps toward widening North Broad St., between Ridgewood Ave. and point a few feet south of Williamson Ave., were taken Sept. 8, when joint meeting of township committee and road committee of Board of Chosen Freeholders was held. The distance proposed to be widened covers approximately 2,000 ft.

Passaic, N. J.—Repair work on county roads amounting to \$15,000 has been authorized and taking over of Prospect Ave., running from Midland Park Borough to the New York State line, was approved and county road committee authorized to advertise for bids for improvement of same. Upper maintenance of roads committee recommended appropriation of \$1,500 for repair of Blue Hill road; \$5,800 for Ridge road; \$3,200 for Chestnut Ridge road, and \$4,950 for road leading from Saddle River to Park Ridge. The recommendation was carried.

Watervliet, N. Y.—Colonel W. W. Gibson, commandant at Watervliet arsenal, has asked government authorities at Washington for \$9,000 for repaving

Broadway in front of government property. Total cost will be about \$26,000, which will be divided by city, United Traction Co. and the United States government.

Kinston, N. C.—Citizens of 4 streets have already petitioned and residents of two other streets are expected to petition City Council to pave many blocks more than year's program calls for. About eight blocks of streets running into business section are being treated with sheet asphalt. Property owners are expected to ask for total of 19 more blocks at cost of between \$65,000 and \$70,000.

Mansfield, O.—Ordinance has been adopted determining to proceed with improvement of Mendota St. from Lexington Ave. to west line of Mulberry St. by paving roadway with vitrified brick or block together with the necessary headers, storm and sub-drainage and authorizing the issuance and sale of bonds to pay for said improvement.

Mansfield, O.—Resolution has been adopted declaring it necessary to improve Diamond St., Franklin Ave. and Home Ave. by paving intersection of said streets with vitrified brick or block, with necessary headers, storm and sub-drainage.

Tulsa, Okla.—Tulsa County Commissioners are discussing oiling of main thoroughfares.

Harrisburg, Pa.—The Public Service Commission on Sept. 9 approved contracts between the Philadelphia & Reading Railway and the City Connecting Railroad for abolition of several grade crossings in Chestnut Hill district.

Johnstown, Pa.—Superintendent of Highways H. H. Grazer, to whom was referred largely signed petition of Morrellville people asking that Fairfield Ave. be repaved with asphalt, has said that he favors complete repaving of the thoroughfare, involving laying of new base.

Pittsburgh, Pa.—County Commissioners and County Controller opened bids Sept. 9 for construction of four roads in county. There were 42 bidders on the work. Awards will be made shortly. The roads to be constructed follow: Lincoln way extension from Fifth Ave. McKeesport, to the National Lincoln highway in Versailles Township, a distance of 4-10 miles, brick construction; Elk-horn and Monongahela road from Lock No. 3 to Monongahela River extension road No. 1, in Foward Township, 2.7 miles, brick construction; Round Hill

road from the State road at Round Hill Presbyterian Church to Douglass, 2.37 miles in Forward Township, macadam construction; Scotia Hollow road from Millers Grove and Clairton road to Dravosburg extension road, 1.75 miles, in Jefferson Township, macadam construction.

Sumter, S. C.—By vote of 150 to 26, citizens of Sumter have declared for issuance of bonds not exceeding \$250,000 for street improvements under abutting property taxation plan.

Park City, Tenn.—Ordinance authorizing issuance of \$90,000 street improvement bonds, to be used for paving Magnolia Ave., has passed third and final reading at weekly meeting of Park City Council. Within three minutes after Recorder Anderson had finished calling the roll, the bonds were sold to J. C. Mayer & Co., of Cincinnati. They will pay par, with accrued interest. Street committee has been authorized to advertise for bids as soon as proper specifications could be made. Special Engineer W. A. Park had already estimated cost of paving street as being \$86,882. Length of Magnolia Ave., as given by Engineer Park is 10,100 ft. This is from bridge to corporate limits.

CONTRACTS AWARDED.

Stockton, Cal.—Board of Supervisors have let contracts for improvement of Jack Tone, the Murphy Ferry and Weber roads and West's lane. The work will be started soon. Cy Moreing & Sons will build Weber and Murphy Ferry roads and West lane and C. W. McIntyre will build the Jack Tone road. Improvement on Jack Tone is last link in one road running from northern to southern boundary of county and will cost \$11,000. Murphy Ferry road will cost \$13,512 and will extend for four miles from Collegeville toward Avenue. Grading and improvement on the West lane and on the Weber road will cost \$10,000.

Edwardsville, Ill.—Bids for paving South Buchanan St. are as follows: G. R. Hyten, \$3,577.71; Albert Fohrig, \$3,686.05, and Dunlap-Dippold Co., \$3,766.98. Contract was awarded to lowest bidder, G. R. Hyten.

Warsaw, Ind.—The contract for Jacob Metzger macadam road in Jackson Township, three miles long, was awarded Sept. 7 to Martin McHale, of Logansport, his bid being \$24,893, just \$7 lower than bid of Grossnickle Construction Co., of North Manchester. There were four bidders.

Salina, Kan.—Watts & Amerman have been awarded contract at \$1.40 per sq. yd. for Bermuda asphalt concrete, 52 cts. for curb and gutter and 33 cts. for excavation.

Brownsville, Ky.—The Edmonson County Fiscal Court has awarded contract to build 3½ miles of turnpike from Brownsville to Rhoda to A. A. Smith, of Mt. Pleasant, Tenn., for \$14,000. Work will begin just as soon as contract is approved by State Road Commissioners.

Elizabethtown, Ky.—Court has let contract to S. P. Johnson to build four miles of Dixie highway between this city and Hart County line. Johnson will receive 25 cts. per yd. for hauling and 80 cts. per cu. yd. for crushing the stone.

Jeffersonville, Ky.—Contracts for improving two important roads were let Sept. 7 by Board of County Commissioners in Jeffersonville to Martin F. O'Neill. Roads are known as Omega Lentz and the Froman M. Coots highways. The Lentz road, the old Utica pike, runs from Jeffersonville township line to town of Utica. The Coots road, formerly Hamburg pike, runs from Jeffersonville corporation line to Silver Creek township. Bids for Lentz road were as follows: Alexander Staebler, \$9,700; Cornelius J. Sigmond, \$9,014.44; Robert Grayson, \$8,800; Martin F. O'Neill, \$7,992.60. The difference between the two lowest bidders was \$807.40. Bids on Coots road were: W. O. Sweeney & Co., \$16,427; Robert Grayson, \$16,000; Martin F. O'Neill, \$15,900. There was a difference of \$100 between the two lowest bids.

Grand Rapids, Minn.—Board of County Commissioners have let contract for paving of the portion of Third St. fronting Itasca County court house to Pogue & Mitchell of Grand Rapids and Bovey. This piece of street, consisting of about two blocks, has been one of worst roads in village. It will connect with the Third St. pavement on the west end.

Pasadie, N. J.—Contracts for road improvements aggregating over \$200,000 were let by Board of Freeholders at its regular meeting on Sept. 7. E. C. Humphrey was successful bidder on all three

road improvement contracts, which include Saddle River Ave. and Prospect St. in Saddle River Township, Borough of Glen Rock and village of Ridgewood, at a cost of \$15,055.20; Palisade Ave., in Englewood and Englewood Cliffs, at a cost of \$112,799.25, and Lemoine and Sylvan Aves., in the Boroughs of Fort Lee and Englewood Cliffs, to cost \$66,356.20.

Springfield, N. J.—Contract awarded to John Dorer, of Irvington, at \$6,235 for repaving of Main St. has been approved.

Cadiz, O.—Paving Park St. Clair Sts., to Cass & Meyer, Wheeling, W. Va., at following bid: 8 inlets, ea., \$15; 90 ft. 12-in. sewer, 40 cts.; 5,861 lin. ft. concrete curb, 6x20-in., 36 cts.; 80 ft. headers (old stone redressed), 30 cts.; 8,512 sq. yds. brick pvt., \$1.52; 8,512 sq. yds. sand fill, 6 cts.; total, \$14,621. Other bids: John O. Bates, Stubenville, \$15,047; Patterson & Gratton, Weisville, \$15,104; G. B. Brode Co., New Comerstown, \$16,648.

Columbus, O.—More than a quarter of a million in highway contracts were let Sept. 10 by Highway Commissioner Clinton Owen. They were distributed about state and a number are to be completed this fall, but the larger are to be completed next year. There was lively bidding. The contracts were: Allen County, Lime-Delphos road, bridges, culverts, grading and paving with surface treated macadam, 16 ft. wide, 2.13 miles, to J. A. Westrick, Holgate, O., \$25,900. Butler County, Cincinnati-Hamilton road, constructing steel bridge and remodeling abutments, to Garver & Wetz, Hamilton, \$1,298.99. Champaign County, Urbanside road, constructing bridges, culverts, grading and paving with water-bound macadam, 14 ft. wide, 1 mile, to K. E. Kunkle, Dayton, \$7,943. Delaware County, Columbus-Sandusky road, constructing bridges, culverts, grading and paving with bituminous macadam, 16 ft. wide, 1.03 miles, to Edwards Bros., Sunbury, \$12,500. Geauga County, Burton-Bloomfield road, constructing bridges, culverts, grading and paving with concrete, part to be 10 and part 20 ft. wide, 2.97 miles, to Yount & Jackson, \$29,000. Montgomery County, Dayton-Troy road, bridges, culverts, grading and paving with brick, 15 ft. wide, 1.38 miles, to Yount & Jackson, of Dayton, \$24,900. Montgomery County, Madison-Jefferson road, bridges, culverts, grading and paving with brick, 16 ft. wide, 2.03 miles, to Yount & Jackson, of Dayton, \$34,940. Van Wert County, Van Wert-Delphos road, bridges, culverts, grading and paving with bituminous macadam, 16 ft. wide, 1.02 miles, to McArthur & Fox, of Belle Center, \$9,100. Wyandot County, Bucyrus-Upper Sandusky road, bridges, culverts, grading and paving with brick, 14 and 16 ft. wide, 1 mile, to Modern Construction Co., of Fremont, \$16,700. Wyandot County, Upper Sandusky, Bellevue road, bridges, culverts, grading and paving with brick, 14 ft. wide, 1 mile, to Modern Construction Co., of Fremont, \$15,700. The bureau of maintenance and repair let the contract for repairing bridges, culverts, grading roadways and resurfacing with bituminous macadam, 16 ft. wide, 3.98 miles, to J. P. Warnick, of Cadiz, for \$32,775.76.

East Palestine, O.—The James McCarron Construction Co., of Youngstown, has secured contract for four different stretches of roads which are to be improved over the township. McCarron's bid for total work was \$39,137.74. The East Palestine-Jimtown road is to be paved with 10-in. brick at a cost of \$5,982.24, while the contractor will receive \$12,201.58 for paving with the same material the stretch of road between Simson's corner and the Woodlawn school house, a part of the road from East Palestine to East Fairfield. Waterbound macadam is to be used in building of two remaining sections of road. The Unity-Springfield road is to be constructed of this material for \$7,853.90. The Unity-Petersburg highway will need \$13,103.02 for its completion. Four bidders submitted their prices for road construction, while but three sought to buy township bonds.

Hamilton, O.—Word was received Sept. 9 by Federal Asphalt Paving Co., of this city, that it had been awarded contracts for paving streets in Charleston, W. Va., amounting to \$50,000 and had also been successful in landing a \$25,000 contract in Wabash, Ind.

Newark, O.—Contract for paving of Sixth St. has been let to M. T. Keeley, of Newark. Paving will be of Tarvia, which contractor guarantees to keep in good condition for a period of five years. The paving will extend from Main to

Granville St. and will cost \$1.30 a sq. yd. The paving of the street will cost in total \$5,960.80.

Chester, Pa.—Although contract prices for paving of streets in this city were extremely high, it was decided to pave Ninth St. from Edgmont Ave. to Ninth St. bridge and Flower St. from Second to Third. On motion to award contracts first named street contract was awarded to Union Paving Co. at their bid of \$1.81 per sq. yd. for bitertine and brick gutters; contract for paving of Flower St. from Second to Third St. was awarded to same company for same material at their bid of \$1.77 per sq. yd.

Erie, Pa.—Street improvements to cost \$16,231.50 were ordered by Council Sept. 9. Contract was awarded to J. & M. Doyle for grading, curbing and paving Wayne St. from Third to Sixth. The price was \$6,150. Same firm won contract for grading, paving and curbing 19th St. from Ash to Wayne for \$6,170.50. Mayer Bros. Construction Co. was awarded contract for grading, curbing and paving Ninth St. from East Ave. to Pennsylvania Ave.

Philadelphia, Pa.—Edwin H. Vare was on Sept. 9 awarded contract for improving Passyunk Ave. from 28th St. to Schuylkill River, on his bid of \$42,436.59. Work includes the laying of asphalt and granite block pavements. In addition to announcing the award made to Vare, Acting Chief Taylor of the Bureau of Highways also stated that more than a dozen contractors share in other highway work to be carried on in all parts of the city. Total amount of the work which will be started shortly is \$273,914.49. Seven contractors will divide grading work to cost \$16,733. The Eastern Paving Co. and the Union Paving Co. were the two low bidders for asphalt paving, which will cost the city \$32,518. The Union, Barber Asphalt and Eastern Paving Cos. were also low bidders for \$40,131 worth of asphalt repaving work. For work of repaving with granite block, for which \$45,433 will be spent, there were four low bidders, the Mack Contracting Co., the McNichol Paving Co., James Kane and the Philadelphia Paving Co.

SEWERAGE

Keokuk, Ia.—Resolution has been adopted for construction of 8-in. sanitary sewer through block 19, Reeves, Perry and Williams Addition.

Plattsburg, Mo.—See "Water Supply."

Pasadie, N. J.—Board has appropriated \$12,000 for construction of storm drain in the Borough of Garfield. This amount is county's share of cost.

Trenton, N. J.—Ordinance has been adopted to authorize construction of sewer No. 611, in Hobart Ave., and to provide for payment of cost thereof.

Schenectady, N. Y.—Bids will be received for sewer bonds in sum of \$80,000 until 11 a. m., Sept. 21. James F. Hooker is Comptroller.

Mansfield, O.—Ordinance has been adopted determining to proceed with improvement of Sturges Ave. from Blanch St. to Grover St. by constructing 8-in. sanitary sewer in center of said street, and authorizing issuance and sale of bonds to pay for said improvement.

Middletown, O.—Ordinance has been adopted to issue bonds in sum of \$15,000 for construction of sewers.

Chester, Pa.—Ordinances for erection of sewers on Edgmont Ave. northwest of Mowry St., Seventh St. from Central Ave. to Flower St. and St. Charles St., have been adopted on first reading.

Lansdowne, Pa.—The first step toward interborough sewage disposal system for Clifton Heights, Aldan, Secane and Oakview will be started at meeting of civic associations of Clifton Heights, Aldan, Lansdowne and Upper Darby Township, Friday, evening, Sept. 17, in Aldan. This meeting has been arranged by Aldan Civic Association. Recently Upper Darby Commissioners instructed Engineer Damon to prepare plans for sewage disposal plant. This Mr. Damon has done, and he has selected site at Burmont, along Darby Creek, which has about four acres of waste land. It is believed that State Department of Health will approve this site, on which it is intended to build interborough and township plant.

Rock City, Tenn.—Ordinance for creating improvement district No. 4 has passed third and final reading. This ordinance covers all sewer work that is needed in municipality. Passage of this ordinance means expenditure of about \$7,000.